September 15, 2022

VIA ELECTRONIC MAIL

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Re: Information Supporting Section 404(c) Public Process for Proposed Donlin Gold Mine Project and Reevaluation of Final EIS and Revocation of 404 Permit

Dear Assistant Administrator Nishida and Regional Administrator Sixkiller,

Thank you for meeting with Tribes on July 28, 2022. We appreciate the invitation to provide the U.S. Environmental Protection Agency (EPA) with new information regarding the impacts and scope of the Donlin Gold mine project and gaps in the final environmental impact statement (EIS). We provide that information here and respectfully ask that the EPA initiate a Clean Water Act section 404(c) public process to withdraw and prohibit certain lands from being a disposal site for dredged or fill material for the Donlin Gold mine project. We also request that the EPA support Tribes' requests that the Army Corps of Engineers (Corps) (1) reevaluate the final EIS, including through a supplemental EIS, and (2) separately, reverse the Corps' decision and revoke the 404 permit as it was issued in violation of the Clean Water Act.

Information available to the Regional Administrator supports commencement of a section 404(c) public process. The Regional Administrator has the power to withdraw and prohibit the specification of a particular site for disposal of fill, including the Donlin Gold mine site, if the specification would cause an "unacceptable adverse impact" to municipal water supplies, shellfish and fishery sites, wildlife, and recreational areas.[1] The decision to initiate a public

[1] 33 U.S.C. § 1344(c); 40 C.F.R. § 231.1(c).

process is based on "the information available [to the Regional Administrator]."[2] Available information, including the attached request from Tribes to the Corps and supporting documentation, along with information already in the EPA's possession, provide ample support that the proposed Donlin Gold mine project will cause unacceptable adverse impacts to these resources, including those on the Kuskokwim River, Crooked Creek, and adjacent wetlands and tributaries. This is consistent with the EPA's 3(b) letter informing the Corps that the proposed mine "will" cause unacceptable adverse impacts to these aquatic resources of national importance.[3]

Indeed, available information suggests that the unacceptable adverse impacts from the proposed mine will be even more significant than the EPA previously determined in 2016. For example, crashing Chinook and chum salmon populations on the Kuskokwim River in 2021 and 2022 indicate damage to salmon and rainbow smelt from the Donlin Gold mine project, including by stream dewatering and barging, would be even more severe than previously predicted, and shifts to new fishing locations may not be possible. New information about erosion and usteq[4] indicate that added effects of barge-induced erosion may be even more extensive than analyzed in the final EIS. New information about mercury modeling and transport and climate change suggests that risks to human health of the proposed Donlin Gold mine project may be even greater than the final EIS predicted. And new information about tailings dam failures reinforces the need to analyze a realistic tailings failure and to ensure that appropriate emergency measures are in place. Further, new information suggests that the

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[2] 40 C.F.R. § 231.3(a); *see also* 40 C.F.R. § 231.1(a) ("In making this determination, the Administrator will take into account all information available to him, including any written determination of compliance with the section 404(b)(1) Guidelines made in 40 C.F.R. part 230, and will consult with the Chief of Engineers.").

[3] McLerran, D. J., Regional Administrator, EPA Region 10, Letter to Col. M. Brooks, Alaska District Engineer, Corps (June 27, 2016) (EPA 3(b) Letter). During the Trump administration, the EPA then declined to further elevate the issue but, critically, never determined that the numerous defects in the proposed Donlin Gold mine project had been resolved consistent with the Clean Water Act. Hladick, C., Regional Administrator, EPA Region 10, Letter to Col. M. Brooks, Corps (Aug. 10, 2018); *see also* EPA 3(b) Letter at 2 & Enclosure (identifying specific impacts to support conclusion that the proposed Donlin Gold mine project "will" have unacceptable adverse effects and requesting additional information on the nature and extent of potential impacts to aquatic resources).

[4] Usteq is a Yup'ik word that roughly translates as "surface caves in." University of Alaska Fairbanks, Institute of Northern Engineering *et al.*, *Statewide Threat Assessment: Identification of Threats from Erosion, Flooding, and Thawing Permafrost in Remote Alaska Communities – Report Prepared for the Denali Commission* at 1-1 (Nov. 2019). The Alaska Statewide Mitigation Plan and the Denali Commission use this word to describe the "compounding effects" of erosion, flooding, and permafrost thaw. *Id.*

actual mine contemplated by Donlin Gold LLC will be larger than the project considered in the final EIS.[5]

Additionally, Tribes request that the EPA support their request to have the Corps reexamine the final EIS, including by issuing a supplemental EIS, or reverse its decision. Any supplement must remedy significant shortcomings in the final EIS, including:

- Failure to conduct meaningful tribal consultation;
- Failure to analyze a realistic tailings spill;
- Failure to disclose and address the possibility of contamination from the pit lake to groundwater.

Further, even without considering this additional information, the Corps' permit was issued in violation of the Clean Water Act and should be reversed.

Undersigned Tribes respectfully request an in-person meeting with the EPA the week of September 26, 2022, to discuss this additional information and Tribes' requests.

Quyana,

CHEVAK NATIVE VILLAGE	KASIGLUK TRADITIONAL COUNCIL
NATIVE VILLAGE OF KWINHAGAK	NATIVE VILLAGE OF EEK
NATIVE VILLAGE OF KWIGILLINGOK	NATIVE VILLAGE OF NAPAKIAK I.R.A.
NATIVE VILLAGE OF KONGIGANAK	NATIVE VILLAGE OF TUNUNAK
NATIVE VILLAGE OF NIGHTMUTE	ORUTSARARMIUT NATIVE COUNCIL
TULUKSAK NATIVE COMMUNITY	NATIVE VILLAGE OF NUNAPITCHUK
VILLAGE OF CHEFORNAK	

Enclosures

[5] A more detailed discussion of significant new information bearing on the potential impacts of the proposed Donlin Gold mine project can be found on pages 3-19 of the enclosed letter to the Corps and referenced attachments.

September 15, 2022

VIA ELECTRONIC MAIL

Colonel Damon Delarosa
Commander
U.S. Army Corps of Engineers
Alaska District
PO Box 6898
JBER, Alaska, 99506
E: damon.a.delarosa@usace.army.mil

Re: Information Supporting Reevaluation and Revocation of 404 Permit for Proposed Donlin Gold Mine Project

Dear Colonel Delarosa:

The undersigned federally recognized Tribes[1] again request that the Army Corps of Engineers (Corps) reevaluate its decision to grant a Clean Water Act section 404 permit to Donlin Gold LLC (Donlin), undertake meaningful tribal consultation, and revoke the 404 permit. At a meeting on July 29, 2022, Corps Headquarters invited Tribes to submit additional materials to support their request. Information has become available after the Corps published its April 2018 final environmental impact statement (EIS) that bears on the potential impacts and scope of the proposed Donlin Gold mine project and supports Tribes' request. Additionally, significant gaps in the final EIS must be addressed before the proposed Donlin Gold mine project is implemented. Even without considering this new information, failures to comply with the Clean Water Act section 404(b)(1) Guidelines further compel the Corps to reevaluate and reverse its prior decision to grant a 404 permit. Doing so would be consistent with Biden administration priorities of supporting tribal sovereignty, including by engaging in meaningful tribal consultation, and advancing environmental justice.[2]

The final EIS itself is nearly five years old, and critical data on which it relies is much older and was gathered without adequate tribal consultation. New information about current threats to Tribes and shortcomings in the final EIS and the 404 permit underscore the need for the Corps

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[1] Indian Entities Recognized by and Eligible To Receive Services From the United States Bureau of Indian Affairs, 87 Fed. Reg. 4636, 4637 (Jan. 28, 2022).

[2] Memorandum on Tribal Consultation and Strengthening Nation-to-Nation Relationships, 86 Fed. Reg. 7491 (Jan. 26, 2021); Exec. Order 13985: Advancing Racial Equity and Support for Underserved Communities Through the Federal Government, 86 Fed. Reg. 7009 (Jan. 20, 2021); Exec. Order No. 13175: Consultation and Coordination with Indian Tribal Governments, 65 Fed. Reg. 67,249 (Nov. 9, 2000).

to address these issues now, to meaningfully engage with Tribes, and to ensure its analyses and decisions are based on the best information possible. Specifically, new information on fishery collapses, extreme precipitation due to climate change, erosion and usteq,[3] mercury modeling and transport, water temperature, and tailings dam failures relate directly to the potential impacts of the proposed Donlin Gold mine project and compel the Corps to supplement the final EIS. Additionally, credible new information exists that the actual project would be far larger than studied in the final EIS; the Corps must supplement the final EIS to analyze this much larger mining project as well as the fact that the Donlin Gold mine project would become the gateway mine to the region. Any supplement must also correct serious deficiencies in the final EIS, including inadequate tribal consultation and a failure to disclose and adequately address the possibility of groundwater contamination from the pit lake. Finally, independent of any new information, the Corps' 404 permit was issued in violation of the Clean Water Act and should be revoked. The permit fails to prevent predicted significant degradation to rainbow smelt and does not require commensurate compensatory mitigation for the adverse impacts of the proposed Donlin Gold mine project.

Two sources of authority support the Corps' reevaluation of the final EIS. First, 33 C.F.R. § 325.7(a) provides that the Corps retains jurisdiction to reevaluate and revoke its permit at any time to serve the public interest. This includes for changed circumstances.[4] Second, the National Environmental Policy Act (NEPA) requires that the Corps supplement an EIS when there are "significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts."[5] In general, where a proposed action "has not yet been implemented," a federal agency may be obligated to supplement its EIS.[6]

The discussion below provides a sample of the new information and changed circumstances that compel the Corps to reevaluate the final EIS, including by issuing a supplemental EIS. It also identifies areas in the final EIS and the Corps' permitting decision that are deficient and must be addressed in a new environmental analysis or a new decision.

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[3] Usteq is a Yup'ik word meaning roughly "surface caves in." University of Alaska Fairbanks, Institute of Northern Engineering *et al.*, *Statewide Threat Assessment: Identification of Threats from Erosion, Flooding, and Thawing Permafrost in Remote Alaska Communities – Report Prepared for the Denali Commission* at 1-1 (Nov. 2019) (2019 Denali Commission Report). Both the Alaska Statewide Hazard Mitigation Plan and the Denali Commission use this term to describe the "compounding effects" of erosion, flooding, and permafrost thaw. *Id.*

[4] 33 C.F.R § 325.7(a).

[5] 40 C.F.R. § 1502.9(d)(1)(ii) (2020); *see also* 40 C.F.R. § 1502.9(c)(1)(ii); Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations, 46 Fed. Reg. 18,026, 18,036 (Mar. 23, 1981). Unless otherwise specified, citations to the NEPA regulations are to the 2018 version in effect at the time the Corps published the final EIS.

[6] Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations, 46 Fed. Reg. at 18,036.

I. INTERESTS OF TRIBES

The undersigned federally recognized tribes are located in the Yukon-Kuskokwim Delta in Southwest Alaska. The Yukon-Kuskokwim Delta, an area roughly the size of New York State, is home to Yup'ik, Cup'ik, and Athabascan peoples. The region, Tribes' homeland since time immemorial, has the most tribes of any region in Alaska and is over 80 percent Alaska Native. More than 14,000 people in the region speak Yup'ik as their first language. Tribes' ways of life and the health of all people in the region, including Alaska Natives, depend profoundly on the health of the region's environment—including water, plants, fish, wildlife, air, and more. The vast wetlands that comprise much of the region support plants used for food and medicine, wildlife, and waterfowl, key resources for Tribes to this day. Waterways, especially the Kuskokwim River, tributaries, streams, and sloughs, connect people and communities throughout the region and provide one of the region's most important resources—fish, especially salmon and rainbow smelt.[7]

The proposed Donlin Gold mine project threatens these resources, Tribes' ways of life, and the health and safety of people throughout the region. Even if the mine operates as planned, it will destroy over 30 miles of stream habitat, significantly restrict subsistence uses, violate water quality standards, and significantly degrade the aquatic environment. Just a single failure of the water treatment system or tailings dam would cause catastrophic damage to the environment, cultural resources, and the health of Tribal citizens and community members.

II. NEW INFORMATION SUPPORTS REEVALUATION OF THE EIS

The Corps published its final EIS in April 2018. New information in the following areas directly relates to the impacts of the proposed Donlin Gold mine project and compels reevaluation, including through a supplemental EIS.

- Fishery collapses,
- Extreme precipitation due to climate change,
- Erosion and usteq,
- Water temperature,
- Mercury modeling and transport, and
- Tailings dam failures.

Additionally, although the mine has been permitted for more than four years, construction has not yet begun, counseling in favor of reevaluation.[8]

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[7] U.S. Army Corps of Engineers, Donlin Gold Project, Final Environmental Impact Statement at 3.21-5 to 3.21-12 (Apr. 2018) (FEIS). All FEIS page references refer to the online pagination of the FEIS document.

[8] 33 C.F.R. § 325.7(a).

A. Crashing Fish Populations on the Kuskokwim River

The Kuskokwim River and its tributaries, including Crooked Creek, are recognized as essential fish habitat for all species of Pacific salmon and support one of the largest subsistence fisheries in the state.[9] Historically, salmon have contributed more than half of the total pounds of fish and wildlife harvested in communities throughout the Kuskokwim region.[10] In recent years, however, salmon stocks in the Kuskokwim region have declined precipitously, with a near total collapse of Chinook and chum populations in 2021, and the second lowest coho run on record in 2022.[11]

Although the final EIS recognizes declines in the Chinook salmon population, it does not address the effect of this sustained decline in combination with the crash in multiple salmon species for communities in the Kuskokwim region.[12] In fact, the final EIS was published before the chum and coho crashes, at a time when the availability of these species helped to partially mitigate the impacts of the Chinook declines.[13] With the continued decline of Chinook salmon compounded by the disastrous declines in chum and coho salmon, communities have been unable to meet subsistence needs for over a decade and their access to salmon is significantly strained.[14] The federal government has declared disasters in the region several years in a row as a result of these fishery failures and both commercial and subsistence fishing have been

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[9] FEIS at 3.13-1 to 3.13-2; *see also id.* at 3.13-9, Fig. 3.13-1 (showing extensive salmon habitat in project area).

[10] *Id.* at 3.13-46; *see also* 3.21-92 (describing salmon as among the top resources harvested by communities in the region).

[11] MacArthur, A. R., *For the First Time Ever, State to Close Kuskokwim and Most Tributaries to Coho Fishing,* KYUK (Aug. 16, 2022); Alaska Department of Fish & Game, *Kuskokwim River Salmon Fishery Announcement #14: 2021 Preliminary Kuskokwim Area Season Summary* at 3-4 (Nov. 4, 2021) (indicating that chum salmon returns were among the lowest on record in multiple locations); Siddon, E. (ed.), NOAA Fisheries, *Ecosystem Status Report 2021: Eastern Bering Sea* at 26 (Dec. 2021) (NOAA Ecosystem Report) ("The record low chum salmon runs are of particular concern because chum salmon are the most abundant salmon species returning to the [Arctic-Yukon-Kuskokwim (AYK)] Region and are a critical subsistence, personal use, and commercial resource."); Kuskokwim River Inter-Tribal Fish Commission, *Kuskokwim River Salmon Situation Report* (Sept. 2021) (KRITFC Situation Report) (describing effect of low salmon returns on people in the Kuskokwim region).

[12] FEIS at 3.13-37 to 38 (recognizing variable, but historically low, Chinook returns in Kuskokwim River since 2010 that have not met escapement levels); *id.* at 3.13-47; *id.* at 3.21-93 to 3.21-94 (describing restrictions on Chinook harvest, but not chum or coho harvest).

[13] *Compare id.* at 3.13-2 (recognizing recent conservation measures for Chinook harvest with no discussion of declines in other salmon populations) *with* NOAA Ecosystem Report at 26 ("Failure of age-4 chum salmon returning to AYK rivers in 2020 forewarned the multiple age-class failure that was observed in 2021").

[14] *See* KRITFC Situation Report at 4-7.

severely restricted.[15] In addition, although the federal government has most recently taken over fisheries management because of this urgent situation, jurisdictional fights between state and federal fisheries managers leave residents of the region subject to conflicting orders, exacerbating these problems.[16]

The final EIS recognizes that the proposed Donlin Gold mine project will affect salmon habitat and, cumulatively, may cause fish populations to shift and affect subsistence users, but its analysis is based on outdated information about salmon stocks and it therefore underestimates the effect of the proposed mine on traditional salmon harvesting in light of the current state of salmon populations in the Kuskokwim region.[17] As the final EIS acknowledges, the Donlin Gold mine project will result in the complete elimination of some stretches of streambed, dewatering of streams, changes in water temperature, sedimentation, scouring, destruction of fish eggs and larvae, degradation of water quality, and other detrimental impacts to salmon habitat.[18] Yet the final EIS projects that these impacts may be "unmeasurable or unnoticeable" in some cases because the damaged habitat comprises a small portion of the Kuskokwim watershed and, in areas where fishers are displaced by barging or other mine activities, "alternative fishing locations are available."[19] With Kuskokwim residents unable to meet their traditional harvest needs, every salmon lost is significant and any added stressors could be critical to salmon populations.[20] Shifting fishing efforts to other locations or other species of salmon may no longer be possible. Further, degrading habitat through the construction and operation of a mine will have consequences for salmon populations and the people who depend on them, and this information should be analyzed and disclosed to the public in a supplemental EIS.[21]

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[15] Murkowski, L., Press Release: *Delegation Announces Disaster Declarations for Alaska Fisheries* (Jan. 21, 2022).

[16] *See* Brooks, J., *As Kuskokwim Fishing Lawsuit Grows, Lawyers Say Subsistence Could be Affected Across Alaska,* Alaska Beacon (July 13, 2022); Pls.' Mot. for Prelim. Inj. and Combined Mem. in Support, *U.S. v. Alaska*, Case No. 1:22-cv-00054-SLG (D. Alaska, May 24, 2022); Order Regarding Pls.' Mot. for Prelim. Inj., *U.S. v. Alaska*, Case No. 1:22-cv-0054-SLG (D. Alaska, June 23, 2022).

[17] *See* FEIS at 3.21-140, 3.21-180.

[18] *Id.* at 3.13-2, 3.13-35.

[19] *See id.* at 3.13-96, 3.21-140, 3.21-180.

[20] *See* KRITFC Situation Report at 12 (explaining that every fish matters for maintaining cultural and subsistence needs of salmon-dependent communities on the Kuskokwim).

[21] *Compare* NOAA Ecosystem Report at 26-27 (listing possible stressors to salmon and noting that, at this time, "there are no known freshwater environmental factors" that caused the poor returns) *with, e.g.*, FEIS at 3.13-2, 3.13-35 (describing myriad impacts to freshwater salmon habitat that the mine will cause). *See also, e.g.*, Defs.' Mot. for Voluntary Remand, *Alatna Village Council v. Heinlein*, Case No. 3:20-cv-00253-SLG at 16-17 (D. Alaska, Feb. 22, 2022) (acknowledging that similarly crashing salmon runs in the Yukon River constituted new information not previously considered, which compounded deficiencies in the agencies' analysis).

B. New Climate Data on Extreme Precipitation

More frequent and more severe storms can increase the possibility for mine features like the pit lake to overflow or for contaminants to flow out from the mine site through groundwater.[22] While the final EIS acknowledges that climate change is expected to change precipitation patterns, it does so generally and does not analyze the potential impacts of more frequent and severe precipitation.[23]

The final EIS relies on a 100-year synthetic dataset created by Donlin, which uses two brief Crooked Creek historical precipitation datasets as a proxy for precipitation at the Donlin mine site.[24] Specifically, the final EIS relies on two Crooked Creek datasets for precipitation (1949-1957 and 1968-1974) and then uses a multiplier of 1.3 to estimate precipitation for Donlin.[25] The final EIS then focuses on monthly average precipitation.[26] While the precipitation model incorporates SNAP data, it is limited to a 25 percent increase in precipitation.[27] And the final EIS water balance and groundwater models do not incorporate climate change predictions. Instead, the final EIS identifies as a mitigation measure for consideration reexamining the water balance models at "regular intervals" and incorporating climate change precipitation predications.[28] But the Corps never adopts it as mitigation.[29]

More recent information published since the final EIS demonstrates that the Corps must revisit this analysis. New information shows that the underlying Crooked Creek historical datasets miss historically high precipitation years in Alaska—those with individual days of more than one inch of precipitation.[30] Recent information shows more frequent and severe storms in

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[22] FEIS at 3.26-34 (recommending as mitigation incorporating "a potentially longer-term event (time of concentration) into final design of major structures at the mine," reasoning that this could help decrease the likelihood of overtopping, erosion, or release into the environment); Corps and Bureau of Land Management, Donlin Gold Project, Joint Record of Decision at 6-1 to 6-4 (2018) (JROD) (not requiring the mitigation described in final EIS at 3.26-34).

[23] *See, e.g.*, FEIS at 3.26-10, Tbl. 3.26-3 (listing average monthly precipitation derived from a synthetic dataset).

[24] *Id.* at 3.4-9, 3.5-26.

[25] *Id.* at 3.4-5, 3.4-9, 3.5-26.

[26] *Id.* at 3.4-6, Tbl. 3.4-1.

[27] *Id.* at 3.26-32 ("A 25 percent increase in annual precipitation was selected to represent the effects of climate change on the [tailings storage facility] during Operations in sensitivity runs on the Mine Site water balance model.").

[28] *Id.* at 3.26-47.

[29] JROD at 6-1 to 6-4.

[30] NOAA National Centers for Environmental Information, State Climate Summaries 2022: Alaska at 3 (2022) (Alaska State Climate Summary) (number of daily precipitation events of one inch or more having the highest values in 1930s, with numbers near or below average since 1990).

Alaska are predicted and that *stronger* trends exist for a *higher* scenario.[31] Much of Alaska has seen an increase the heaviest one percent of three-day precipitation totals.[32] Concerningly, recent mining studies show that mine proponents typically fail to consider the changing environment when designing and building infrastructure.[33]

New information about the frequency and severity of precipitation due to climate change relates directly to the proposed mine's potential impacts—e.g., through overtopping and groundwater contamination. This information must be incorporated in a supplemental EIS and disclosed to the public.

C. New Information on Erosion, Usteq in the Yukon-Kuskokwim Region

The final EIS relies on modeling to predict wave heights of up to 0.8 feet for downriver barges traveling at full speeds.[34] It states that barge wakes can displace young of-year salmon, though it states that the effects would be within population variation.[35] At the same time, the final EIS concludes that wave effects from barges on riverbank erosion would be "small" especially when compared to erosion from natural forces.[36] The final EIS also acknowledges that propeller wash could cause erosion near ports and other barge landing points and notes that propeller wash from barges can cause scour, which would then be "erased" in subsequent high water events.[37] The final EIS emphasizes that two natural forces, thermal-erosion niching (thawing of ice-rich permafrost) and ice jams, are the primary causes of riverbank erosion.[38] The final EIS fails to consider the cumulative, amplifying effects of other phenomena like permafrost thaw on barge-induced erosion.[39]

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[31] U.S. Global Change Research Program, Fourth National Climate Assessment, Vol. II: Our Changing Climate at 88 (2018), *available at* https://nca2018.globalchange.gov/downloads/NCA4_Ch02_Changing-Climate_Full.pdf (last accessed Sept. 14, 2022).

[32] Alaska State Climate Summary at 3; *accord* American Association for the Advancement of Science, *Community Spotlight: Homer and Napakiak* at 3 (2019) (stating that heavy precipitation events expected to increase and citing Alaska Native Tribal Health Consortium "Erosion in Napakiak" 2018 Report) (AAAS Community Spotlight).

[33] Sergeant, C. J. *et al., Risks of mining to salmonid-bearing watersheds*, 8 Science Advances 26 (Jul. 1, 2022) ("Mine infrastructure has typically been built under the assumption that the current variability of the physical environment will not change.").

[34] FEIS at 3.13-118, 3.13-123.

[35] *Id.*

[36] *Id.* at 3.5-117; *id.* at 3.2-109.

[37] *Id.* at 3.5-124.

[38] *Id.* at 3.2-46.

[39] *See generally id.* at 3.5.

New information about climate change and the cumulative effects of erosion in the Yukon-Kuskokwim Delta requires the Corps to supplement its EIS. In 2019 the Denali Commission published a threat report focusing on western Alaska.[40] The report focuses on erosion, permafrost thaw, and flooding, along with usteq.[41] Usteq is a Yup'ik word that "roughly translates as 'surface caves in.'"[42] The report notes that the Alaska Statewide Hazard Mitigation Plan defines usteq as "'a catastrophic form of permafrost thaw collapse that occurs when frozen ground disintegrates under the compounding influences of thawing permafrost, flooding, and erosion.'"[43] The Denali Commission report explains that any single effect can be catastrophic. But usteq recognizes that when these effects occur together, their interactions are complex and their effects can be amplified.[44] Many of the communities listed in the report that are subject to combined threats, including erosion and permafrost thaw, are located along the Kuskokwim River.[45] The report then provides guidance—such as sample scoping reports—on how to model or analyze these effects, including usteq.[46]

Even more recently, a 2021 Alaska Department of Natural Resources, Division of Geological and Geophysical Surveys report provides information on the current rate of erosion for specific communities. The report and accompanying tool estimates how many years until a particular community school, washeteria, community center, etc. will go into the river.[47] Accounting for this information is particularly important as communities throughout the Yukon-Kuskokwim Delta are relocating both individual structures and entire communities as a result of erosion,

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[40] 2019 Denali Commission Report.

[41] *Id.* at vii, 1-1.

[42] *Id.* at 1-1.

[43] *Id.* ("In many instances, the impacts of erosion, flooding, and thawing permafrost amplify one another to form a combined threat known as usteq. The Alaska Statewide Hazard Mitigation Plan utilized the Yupik word 'usteq' to describe the compounding effects of such threats (ADHS&EM, 2018).").

[44] *Id.*; *id.* at 3-9 (describing Newtok as an "excellent" example of usteq due to the effects of erosion and flooding accelerating permafrost thaw); *id.* ("Usteq is a subset of the combined threats, and represents the impacts flooding and erosion can have upon sites also subject to permafrost thaw.").

[45] *Id.* at 5-11.

[46] *Id.* at Apps. B, C, D; *see also, e.g., id.* at 6-2 (stating that one element for riverine erosion is to estimate the flow and velocity at which significant erosion occurs).

[47] Buzard, R. M. *et al.*, Alaska Department of Natural Resources, Division of Geological & Geophysical Surveys, *Erosion exposure assessment of infrastructure in Alaska coastal communities* (2021).

permafrost thaw, flooding, and usteq.[48] Donlin's barges—triple in number and up to four times as large as current barge traffic—could increase erosion faster than communities can move.[49]

These studies on erosion in western Alaska along with current information on climate change and permafrost thaw provide critical new information that bear on the cumulative effects of barging on erosion and to specific communities. The Corps must supplement the final EIS to take this information into account.

D. New Data on Water Temperature in Crooked Creek

New information from Donlin's contractor BGC Engineering Inc. predicts water temperature increases from mining operations to come within 0.3°F of the state's temperature standard—without accounting for factors like climate change. Taking into account climate change, the model demonstrates that the proposed Donlin Gold mine project would violate water temperature standards, harming fish incubation and spawning habitat in Crooked Creek.

Alaska has water quality standards of 55.4°F (13°C) for egg and fry incubation and spawning.[50] Mining operations such as pit dewatering and elimination of other colder surface and groundwater flows would cause flow levels in Crooked Creek to decrease.[51] The final EIS predicts these effects will cause water temperatures in Crooked Creek to exceed these water quality standards.[52] The final EIS reviewed maximum temperature readings contained in an unpublished 2009 study by a Donlin contractor and concluded that decreases in groundwater flow due to mine processes like dewatering could cause stream temperatures near the mine to be "close to or above" Alaska's temperature standards for both egg/fry incubation and

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[48] AAAS Community Spotlight; *see also* Prepared Testimony of Jennine Jordan, Government Relations Liaison, Calista Corporation (Feb. 12, 2019); *available at* https://naturalresources.house.gov/imo/media/doc/Testimony%20of%20Jennine%20Jordan%20Final.pdf (last accessed Sept. 14, 2022).

[49] FEIS at 3.13-2 ("Along the Transportation Corridor, depending on water conditions, project-related barge/tug wakes and propeller forces along the Kuskokwim River travel route may accelerate bank erosion and create riverbed scour, particularly in narrow and shallow segments of the river during the Construction and Operations phases.").

[50] 18 AAC 70.020(b)(10)(C).

[51] FEIS at 3.13-2, 3.13-101; *see also* BGC Engineering Inc., Analysis of Crooked Creek Stream Temperature – Draft at 23 (Sept. 28, 2021) (BGC 2021); Weatherly, H., Principal Hydrologist, BGC Engineering, Inc., Project Memorandum to Eric Fjelstad, Perkins Coie at 3 (Apr. 14, 2022) (BGC 2022) (explaining that the model shows a maximum temperature of 55.1°F, compared to the applicable standard of 55.4°F).

[52] FEIS at 3.13-101 to 3.13-102.

spawning as well as for migration and rearing.[53] The final EIS did not do specific modeling to try to predict these exceedances.[54]

In 2021 and 2022 Donlin provided new information showing that mine operations *will* cause Crooked Creek stream temperatures to exceed water quality standards for temperature. Specifically, Donlin provided a new temperature model that excludes, among other things, climate change.[55] Donlin's model specifically uses Crooked Creek water temperature data for 2005-2009 and 2011, and focuses particularly on July 2005 as being the warmest month in that period.[56] The model predicts that as a result of mine operations, temperatures in Crooked Creek would rise to within 0.3°F of the standard.[57] Climate change, however, is predicted to raise the temperature at Crooked Creek by 3-7°F in the 2030-2039 period and by 4-11°F in the 2060-2069 period under a low emissions scenario. Under a high emissions scenario (RCP 8.5) the ranges are 3-9°F and 7-14°F, respectively.[58] Taking into account predicted climate change, the model indicates that the proposed mine will violate the temperature standards for egg/fry incubation and spawning. Additionally, by omitting other causes of warming—warmer years, which have already happened, or thermal effects from the air—to reach its conclusion of no temperature exceedances, Donlin's new model provides further certainty that the proposed mine will violate water quality standards for temperature.[59]

Donlin's recent temperature model constitutes new information showing that the mine will certainly violate water quality standards for temperature in Crooked Creek and thereby significantly impact the incubation and spawning habitat for fish in portions of the creek.[60] Additionally, Donlin's temperature model demonstrates that there is no reasonable assurance supporting the State of Alaska's 401 certification on which the Corps' 404 permit rests.[61] The

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[53] *Id.*

[54] *See generally id.* at 3.13.

[55] *See* BGC 2021; BGC 2022 at 3, 6.

[56] BGC 2021 at 5, 15; BGC 2022 at 3, 6.

[57] BGC 2021 at 23; BGC 2022 at 3.

[58] SNAP Community Climate Charts, Crooked Creek (Qipcarpak), Alaska, University of Alaska Fairbanks, Scenarios Network for Alaska, Community Climate Charts, https://snap.uaf.edu/tools/community-charts (last accessed Aug. 26, 2022).

[59] *See* Orutsararmiut Native Council, Letter to Alaska Department of Environmental Conservation, Re. Donlin Gold Mine Certificate of Reasonable Assurance at 7-9 (Mar. 29, 2022).

[60] *See generally* BGC 2021; BGC 2022 at 3.

[61] 40 C.F.R. § 121.2(a)(3) (2019); *see also compare* BGC 2022 at 6-7 (listing proposed mitigation measures with no analysis of the feasibility, efficacy, safety, or environmental impact of the listed measures), *with* Center for Science in Public Participation, Memorandum at 2 (May 5, 2022) (examining BGC's proposed mitigation measures and concluding "BGC Engineering's mitigation proposals are all theoretical, and moving something from theory, to lab demonstrations, then into practical field application has historically been problematic for the mining industry").

Corps must supplement the final EIS in order to take into account this new water temperature information that bears on the potential environmental impacts of the project.

E. New Information about Mercury Modelling, Transport

1. Mercury Modelling

New information suggests that the amount of mercury deposited would raise mercury levels to an even higher level than predicted in the final EIS and poses a greater risk to human health than initially assessed. The Corps should supplement the final EIS to account for this new information.

The final EIS relies on a human health risk assessment (HHRA) for the proposed Donlin Gold mine project.[62] The HHRA looked at the additional risk of human exposure to contaminants, including mercury, from the proposed Donlin Gold mine project.[63] The HHRA was itself based on predictions in the final EIS that the project will increase the amount of mercury in surface waters by 40 percent.[64] This was based on data from 2005 to 2015.[65] The HHRA concluded that the "small" increases in contaminants like mercury due to the operation of the Donlin Gold mine project would not result in "unacceptable risks" to humans.[66] The Corps then relied on these findings to conclude that potential health impacts to humans from exposures to contaminants from the Donlin Gold mine project were relatively low or Category 1.[67] New information about mercury modeling and climate change suggest that mercury deposition by the proposed Donlin Gold mine project may raise mercury levels even higher than previously predicted, along with the attendant risk to human health. The Corps must supplement the EIS to include these new scientific findings.

Specifically, new studies suggest that mercury loading and exceedances in Crooked Creek and surrounding areas could be even higher than predicted in the final EIS and relied upon in the

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[62] *E.g.*, FEIS at 3.22-2, 3.22-63 to 3.22-66, 3.22-71 to 3.22-78.

[63] *Id.*, App. AB at AB.1-2. The HHRA was never disclosed during the NEPA process to the public or Tribes due to it allegedly containing "sensitive information," but the Corps represented that the results were summarized in Appendix AB of the final EIS. *Id.*

[64] *Id* at 3.7-151; Environmental Resources Management, *Human Health Risk Assessment for the Donlin Gold Project, Alaska* at ES-1, 3-3 to 3-4, 5-15 to 5-16 (June 2017).

[65] FEIS at 3.7-29

[66] *Id.* App. AB at AB.7-31.

[67] *Id.* at 3.22-63 to 3.22-78; *id.* at 3.22-3 (explaining that Category 1 impacts are those in which "actions to reduce negative impacts are not needed).

HHRA.[68] This is critical because mercury can bioaccumulate in aquatic organisms, which can then be consumed by people.[69] New information published since the final EIS shows that a significant amount of mercury is deposited in plants, soil, and snowpack and in some cases may be transformed into reactive mercury.[70] This information was never taken into account in the final EIS and Donlin specifically declined to account for a significant 2017 study in its HHRA, dismissing it as "tangential."[71] These studies are particularly important as they demonstrate that a type of mercury not usually measured in fact accounts for a significant portion of atmospheric mercury deposition.[72] That is, they show that the amount of mercury being deposited and that can be transported is greater than would have previously been expected.[73] Donlin's proposed mine would then contribute even more mercury into the ecosystem.[74]

Further, the Corps must consider new information about increased rates of permafrost thaw and increased wildfires, both of which are increasing and may increase mercury loading and

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[68] Olson, C. *et al.*, *Mercury in Active-Layer Tundra Soils of Alaska: Concentrations, Pools, Origins, and Spatial Distribution*, 32 Global Biogeochemical Cycles 1058–1073 (2018) (Olson 2018); Douglas, T. & Blum, J., *Mercury Isotopes Reveal Atmospheric Gaseous Mercury Deposition Directly to the Arctic Coastal Snowpack*, 6 Environ. Sci. Technol. Lett. 235–242 (2019) (Douglas & Blum 2019).

[69] *E.g.*, United Nations, *Minamata Convention on Mercury: Text and Annexes* (Sept. 2019) (Minamata Convention) (acknowledging "the particular vulnerabilities of Arctic ecosystems and indigenous communities because of the biomagnification of mercury and contamination of traditional foods").

[70] Olson 2018; Douglas & Blum 2019; *see also* Obrist, D. *et al.*, *Tundra uptake of atmospheric elemental mercury drives Arctic mercury pollution*, 547 Nature 201–204 (2017) (Obrist 2017).

[71] Obrist 2017; Donlin, Donlin Gold Project: Human Health Risk Assessment – U.S. Environmental Protection Agency's Detailed Comments, Donlin Response at 6 (2018).

[72] *See* Aguirre, E. L., *UML-led Team Finds Source of Arctic Mercury* (July 13, 2017).

[73] *Id.*; Douglas & Blum 2019; Olson 2018; Obrist 2017; *see also* Arctic Monitoring and Assessment Programme (AMAP), *AMAP Assessment 2021: Mercury in the Arctic* 119 (2021) (AMAP 2021) ("The Hg(0) deposition pathway to Arctic terrestrial ecosystems is likely to be underestimated in current models, and needs improvement."); Olson 2018 at 1058 (noting that soils can be buffers between atmospheric deposition of mercury and runoff as well as major sources of mercury for water bodies).

[74] FEIS at 3.7-151.

methylmercury formation.[75] Further, mercury pulses can occur as snowmelt runs over still-frozen soil and directly into wetlands and rivers.[76] Existing scientific methodologies like the use of stable mercury isotope ratios allow some of these critical findings to be incorporated directly into analysis.[77] And a new analysis may show that mercury exceedances could be of even greater frequency and magnitude than predicted in the final EIS and pose an even greater risk to human health. Additionally, to the extent that a new study issued by Donlin attempts to refute this in order to find a negligible contribution of mercury, that study should receive close examination.[78] This is because, among other things, the study, submitted in anticipation of

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[75] Douglas, T. A. *et al.*, *Recent degradation of interior Alaska permafrost mapped with ground surveys, geophysics, deep drilling, and repeat airborne lidar*, 15 The Cryosphere 3555-3575 (2021); FEIS, App. X at 104-105; Krakow, M., *As climate change reshapes Alaska's landscapes, tundra fires are getting worse*, Anchorage Daily News at 1-2 (June 14, 2022) ("Fire on the Southwest Alaska tundra isn't unheard of, but as climate change continues to reshape the state's environment, tundra fires are becoming both more frequent and more severe."); *id.* at 2-3 (previously, fires in Southwest Alaska were "small" and "infrequent," whereas the current fires are "'unprecedented,'" quoting a research professor at the University of Alaska, Fairbanks); Communities of Lower Kalskag, Upper Kalskag, Aniak, Chuathbaluk, Napaimute, Crooked Creek, Georgetown, Red Devil, Sleetmute, and Stony River, *Adapting to Climate Change in the Middle Kuskokwim* (2020) ("Middle Kuskokwim residents have experienced an increase in the number of wildfires, especially during dry years, and more that are caused by lightning strikes."); Ebertz, O., *Residents of the Y-K Delta should expect more tundra fires as the climate continues to warm,* KYUK (Aug. 18, 2022); Mimbs Noyce, C., *Why Alaska's Fire Season was so Unusual*, The Atlantic (Aug. 24, 2022); Beck, C. A. H. *et al.*, ADAPT Y-K Delta: Climate Adaptation Strategies for the Yukon-Kuskokwim (Y-K) Delta Region at 9 (2019) (noting increased permafrost thaw and increased fire in the Yukon-Kuskokwim Region); Witt, E. L. *et al.*, *Forest Fire Effects on Mercury Deposition in the Boreal Forest*, 43 Env. Sci. Technology 1776, 1776 (2009) (documenting both total mercury and methyl mercury increases after fires); *see also* Schreiber, M., *Climate change is driving a sharp increase in Arctic mercury levels, a new report says*, ArcticToday (Sept. 7, 2022) ("As ice melts and permafrost thaws, mercury levels will likely rise in the Arctic, with serious implications for the people and ecosystems of the Arctic, according to a sweeping report published Tuesday by the environmental monitoring group of the Arctic Council"); AMAP 2021 at 129 ("Permafrost thaw in ice-rich, low-relief regions may result in the formation of thermokarst wetlands, ponds and lakes. These systems have been repeatedly identified as Hg methylation hotspots across the Arctic due to the concurrent mobilization of carbon and nutrients, creating conditions suitable for methylation." (citations omitted)).

[76] Douglas & Blum 2019.

[77] Janssen, S. E. *et al.*, *Chemical and Physical Controls on Mercury Source Signatures in Stream Fish from the Northeastern United States*, 53 Env. Sci. Tech. 17 (2019).

[78] Ramboll US Consulting, Inc., Draft Report: Donlin Gold Mine Supplemental Mercury Modeling and Mass Balance Analysis (Oct. 22, 2021); Bates, R., Division of Water, Letter to T. Waldo, Earthjustice, Re. Donlin Gold Mine Certificate of Reasonable Assurance Remand

litigation, eliminates the conservative assumptions in the final EIS with respect to mercury and has never received inter-agency review.[79]

The Corps must take into account new scientific studies and evidence of changes to climate that indicate the amount of mercury being deposited and that could be transported into surface water is greater than previously anticipated or measured. And conclusions about mercury retention should be supported by the best science—namely appropriately designed studies to measure mercury retention in a given area. Further, to the extent a 2021 study by Donlin suggests that mercury contributions are negligible in part by eliminating the conservative assumptions of the final EIS, it should be treated with skepticism and subjected to searching inter-agency review.

2. *Mercury Waste Management*

The Corps must also supplement its final EIS to account for best practices and guidelines regarding the management of mercury waste.

The final EIS states primarily that Donlin will comply with basic federal requirements about the labeling and packaging of hazardous waste like mercury.[80] It also states that there is "minimal" capacity for spill response for hazardous substances like mercury or cyanide.[81]

The Minamata Convention, of which the United States is a signatory, was signed in 2013 and became effective in August 2017.[82] It is named after the city of Minamata, Japan, in which numerous residents experienced severe mercury poisoning from wastewater discharges from a chemical factory.[83] The Minamata Convention requires that mercury waste be managed using environmentally sound principles.[84] It provides that the Convention will create an annex that takes into account the guidelines developed by the Basel Convention governing hazardous

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Decision (3AN-21-06502CI) (May 13, 2022) (rubber-stamping Donlin's new analyses on mercury and temperature and re-issuing the 401 water quality certification). This decision and related documents are posted at https://dec.alaska.gov/water/wastewater/donlin-gold-mine-certification-remand-decsion/.

[79] *See* Mot. for Interlocutory Remand, *Orutsararmiut Native Council v. Alaska Dep't of Env't Conservation*, Case No. 3AN-21-06502 CI (Nov. 19, 2021); Order Granting Interlocutory Remand, *Orutsararmiut Native Council v. Alaska Dep't of Env't Conservation*, Case No. 3AN-21-06502 CI (Dec. 29, 2021).

[80] FEIS at 3.24-6 to 3.24-7.

[81] *Id.* at 3.24-8 to 3.24-9.

[82] U.S. Environmental Protection Agency, *Minamata Convention on Mercury: History of the Minamata Convention* (the U.S. signed the Minamata Convention on November 6, 2013) (History of Minamata Convention); Minamata Convention.

[83] History of Minamata Convention; Minamata Convention, Foreword.

[84] Minamata Convention, art. 11.

waste management and disposal.[85] In February 2021, the Minamata Convention published a draft annex that it then submitted to the Basel Convention as the latter updated its mercury waste handling guidelines.[86] The draft annex submitted by the Minamata Convention includes provisions for the following:

- The transporting company should carry insurance to cover "personal, material, and environmental damage" from a spill;
- Guidance on specific storage of elemental mercury, including leaving adequate head space in containers;
- Reiterating that before mercury is transported, there are adequate contingency plans in place.[87]

This new information, published after the final EIS, directly relates to the Donlin Gold mine project's potential impacts to human health and the environment. The Corps must supplement its EIS to consider this information.

F. New information on Tailings Dam Failures and a Failure to Analyze a Realistic Tailings Dam Spill

A catastrophic tailings dam spill would not only bury habitat, kill fish and aquatic life, and contaminate much of the Yukon-Kuskokwim Delta for decades, but also present a danger to human life.[88] If a tailings dam breach were to occur, communities downstream must be warned immediately to get out of the way of the water and solid material released in the failure. In a dam breach, water mixed with solid material typically reaches nearby communities in minutes, so knowing where the material from a dam failure will go, and how fast it will arrive, are critical to emergency planning.[89] New information reinforces the conclusion that the final EIS failed to analyze a realistic tailings dam spill, instead only analyzing a spill of 0.5 percent of the tailings dam's contents, and that the Corps has failed to require adequate emergency planning.

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[85] *Id.*; *see also* U.S. State Department, *Basel Convention on Hazardous Wastes* (the U.S. signed the Basel Convention in 1990).

[86] Secretariat, Minamata Convention, *Technical guidelines on the environmentally sound management of wastes consisting of, containing or contaminated with mercury or mercury compounds, Note* (Aug. 20, 2021).

[87] *Id.*

[88] *See* FEIS at 3.24-83 to 3.24-90, 3.24-100, 3.24-158 (listing impacts for just a 0.5 percent tailings spill). The Corps analyzes a 2.6 million cubic yard spill of tailings and water, approximately 0.5 percent of the total projected volume of tailings of 556 million tons or approximately 528 cubic yards. *Id.* at 2-11 (556 million tons of tailings at an estimated density of 78 lbs per cubic foot); *id.* at 3.24-2.

[89] Earthworks, Safety First: Guidelines for Responsible Tailings Management at 21-22 (May 2022) (Earthworks 2022).

As described in the final EIS, the proposed mine includes a tailings facility that would hold 600 million tons of wet tailings slurry behind a 471-foot dam.[90] During the EIS process, the Corps had credible information that a much larger tailings dam spill than 0.5 percent was reasonably foreseeable. In 2014, as the Corps was preparing the draft EIS, the Mount Polley tailings dam failed, releasing 10 to 20 percent of its contents.[91] At the time, the Canadian Dam Association—the primary source of dam failure guidance relied on around the world—had information indicating that "typically, about 1/3 of the impounded tailings are lost" when tailings dams fail.[92] The association also had guidance that recommended: "The analyses leading to consequence assessment and classification of the dam should include characterization of a hypothetical dam breach, flood wave routing, inundation mapping, and evaluation of the impacts. . . . A dam-breach analysis [should be] used to determine the ultimate discharge from a hypothetical breach of the dam."[93] Additionally, in March 2010, the Fairbanks Gold Company conducted a dam breach assessment for the Alaska Department of Natural Resources in order to assess the potential risks and effects of the release of suspended tailings from the Fort Knox tailings dam.[94] The modeling scenario assumed the tailings dam was breached from the top of the dam all the way to the dam foundation. This dam failure modeling effort would have been the existing precedent for dam failure modeling in Alaska when the Donlin draft EIS was being developed.

Agency and public commenters also urged the Corps to analyze a more realistic scenario and disclose the risks to the public.[95]

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[90] FEIS at 2-32.

[91] *Id.* at 3.24-31; AECOM, Technical Memorandum to Corps, Re: Evaluation of Proposed Donlin Gold Tailings Storage Facility Dam with Respect to Mount Polley Tailings Dam Breach at 6 (June 3, 2015) ("On August 4, 2014 the eastern dam wall, called the Perimeter Dam, failed. . . . The volume of tailings and water lost during the [Mount Polley] breach was on the order of 10% to 20% of the total capacity of the dam.").

[92] Small, A. *et al.*, *Advancing the State of Practice for Tailings Dam Breach Assessment Using Empirical Correlations*, CDA 2017 Annual Conference, Kelowna, BC, Canada at 7-8 (Oct. 16-18, 2017).

[93] Canadian Dam Association, *Dam Safety Guidelines 2007* at 2 (2013 edition). The Mining Association of Canada, which has guidance on the management of tailings dams, including Emergency Preparedness Plans, and which is used extensively by mining companies worldwide, uses the Canadian Dam Association's guidelines for tailings dam failure modeling. *See* Mining Association of Canada, *A Guide to the Management of Tailings Facilities Version 3.2* (Mar. 2021); *see also* ANCOLD, *Guidelines on Tailings Dams: Planning, Design, Construction, Operation and Closure* (May 2012) (Australian-based industry guidelines similarly requiring dam-breach analysis and emergency plans).

[94] SRK Consulting Inc, Fort Knox TSF & WSR Dam Failure Analysis (Mar. 2010).

[95] *See, e.g.*, Center for Science in Public Participation, Comments on Donlin draft EIS at 8-9 (May 24, 2016) (stating the tailings dam failure modeled in the draft EIS assumed that less than 1 percent of the tailings had been released, and that the literature available at that time suggested that the average release of tailings in a dam failure was 20 percent).

Nevertheless, the Corps disregarded that precedent and repeatedly excluded a realistic tailings spill of 20 percent from its analysis and instead limited its analysis to a mere 0.5 percent spill.[96] This was an error because an EIS must examine all "reasonably foreseeable significant adverse impacts" and the possibility of a 20 percent spill is reasonably foreseeable.[97] The Corps assigns a catastrophic tailings dam failure a less than two percent probability over 20 years.[98] This is quite possible, not remote or speculative.[99] And over the projected lifetime of the tailings dam—which must stand forever—the probability of catastrophic failure becomes much higher. Because a much larger spill is reasonably foreseeable, the Corps was required under NEPA to analyze the spill and disclose those risks to the public.[100]

New and updated information from experts since that time has only reaffirmed the need to analyze a realistic 20 percent spill scenario. Dams containing wet tailings are far more dangerous than those containing dry stack or paste tailings.[101] Therefore, it is all the more critical that facilities planning wet storage make available "a transparent risk analysis identifying and evaluating the geographic area and inhabited areas that could be affected by all proposed tailings facilities."[102] Potential loss of life must be identified prior to construction, and if identified, dams must be designed to withstand events such as 10,000-year floods or earthquakes, taking climate change into account.[103] Importantly, the failure scenarios must be based on credible failure models specific to the facility, including catastrophic failure.[104] The most recent guidance from the Canadian Dam Association also recommends drafting

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[96] FEIS at 3.24-29 to 3.24-30.

[97] *See* 40 C.F.R. § 1502.22 (2019).

[98] FEIS at 3.24-29 to 30; SRK Consulting (Canada) Inc., Report from SRK for Donlin Gold, Tailings Storage Facility and Snow Gulch Reservoir – Early Stage FMEA Workshop at 36, 38-41 (Mar. 2015).

[99] *Ground Zero Ctr. for Non-Violent Action v. U.S. Dep't of the Navy*, 383 F.3d 1082, 1090 (9th Cir. 2004) (rejecting contention that terrorist attack on nuclear facility was so "remote and speculative" that it didn't merit study under NEPA). The court explained that in contrast to the instant case, certain infinitesimal probabilities—such as "between one in 100 million and one in one trillion"—are so remote that they do not require analysis under NEPA. *Id.*

[100] 40 C.F.R. § 1502.22 (2019).

[101] Franks, D. *et al.*, *Tailings facility disclosures reveal stability risks*, Nature 11:5353, 3, 5 (2021) (describing likelihood of stability issues in various types of tailings dams and noting companies might be prioritizing lower costs and higher production capacity when choosing wet tailings over dry stack, rather than making decisions based on safety considerations).

[102] Earthworks 2022 at 20; *see also id.* at 6-7 (noting increased incidence and severity of tailings dam failures and the need to model severe scenarios); *see* Skeena Wild Conservation Trust, *Protecting Communities and Watersheds: Risks of Tailings Dam Failures in the Face of Climate Change* (Jul. 2022) (detailing increased potential severity of tailings dam failures in British Columbia).

[103] Earthworks 2022 at 24.

[104] The Global Tailings Review, *Global Industry Standard on Tailings Management* at 8, 22 (2020).

"emergency preparation plans including potential tailings release impacts and actions."[105] Far from a worst-case scenario, a spill larger than 0.5 percent is reasonably foreseeable and must be analyzed and incorporated into infrastructure design and emergency planning. Numerous studies since the final EIS was issued have continued to document that tailings dam failures, including those of 20 percent or more, are not uncommon.[106]

Even a 0.5 percent spill is predicted to have significant consequences for fish habitat and aquatic life in Crooked Creek and the Kuskokwim River.[107] Given the realistic possibility that the tailings storage facility will have a much larger spill at some point during the hundreds of years it will need to be maintained, the Corps must analyze the extent of impacts on the Kuskokwim watershed and people that rely on it.

III. CHANGE IN PROJECT SCOPE

Credible evidence exists that the mine project analyzed in the Corps' final EIS does not represent the full scope of mining Donlin intends to undertake. The Corps must undertake new analysis to study the effects of a much larger mining project because a larger mine was not studied in the final EIS as a reasonably foreseeable future action or otherwise. Agencies must analyze actions that will have a cumulative effect, which is "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions."[108] Projects do not need to be finalized to be reasonably foreseeable.[109] Rather, "NEPA requires that an EIS engage in reasonable forecasting. Because speculation is . . . implicit in NEPA, [courts] must reject any attempt by agencies to shirk their responsibilities under NEPA by labeling any and all discussion of future environmental effects as crystal ball inquiry."[110]

Donlin's parent companies directly acknowledge the significant potential for the Donlin Gold mine project to expand drastically beyond the project studied in the final EIS: "Donlin Gold has excellent exploration potential, with the opportunity to expand the current open-pit resource

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[105] Canadian Dam Association, *Technical Bulletin: Application of Dam Safety Guidelines to Mining Dams* at 16 (2019 ed.); *id.* App. B at 52 (presenting template for a dam safety management system based on good practice guidance from industry authorities).

[106] *See, e.g.*, Dalpatram, A., *Estimation of Tailings Dam Break Discharges, Workshop on Dam Break Analysis* at PDF 7 (Aug. 24-26, 2011) (collating studies of tailings releases, all of which show an average release of over 20%); Azam, S. & Q. Li, *Tailings Dam Failures: A Review of the Last One Hundred Years*, Geotechnical News at 50 (Dec. 2010) (finding the rates of tailings dam failures to be 1.2 percent over the last 100 years).

[107] FEIS at 3.24-54, 3.24-84, 3.24-100, 3.24-158.

[108] 40 C.F.R. § 1508.7 (2019); *id.* § 1508.25(a)(2) (2019); *Morongo Band of Mission Indians v. FAA*, 161 F.3d 569, 579-81 (9th Cir. 1998).

[109] *N. Plains Res. Council, Inc. v. Surface Transp. Bd.*, 668 F.3d 1067, 1078 (9th Cir. 2011).

[110] *Id.* at 1079 (internal quotation marks and citation omitted).

both along strike and at depth. Considering that the current pit occupies only part of a three-kilometer area that is itself only a portion of an eight-kilometer mineralized belt, in NOVAGOLD's view it is *likely* that Donlin Gold's mine life, already measured in decades, or ultimate production profile – or both – is *likely* to be greater than anticipated."[111] And though Donlin recognized this before completion of the final EIS, the final EIS still failed to account for the expansion Donlin's owners view as likely.[112] The CEO of NOVAGOLD, which owns 50 percent of the project, described the potential for expansion neatly: "The more we drill, the more we find. We say that Donlin Gold is a gift that keeps on giving."[113] Indeed, the companies continue to expand their drilling efforts. In its 2022 drilling program results report, Barrick Gold Corporation—the other 50 percent owner of the Donlin project—highlights that the existing planned pits only occupy "less than 5 [percent] of Donlin Gold's land position."[114] Similarly, NOVAGOLD highlights the 2022 drill program as having the largest budget in a decade and touts the project's "significant potential to expand."[115]

Lastly, in addition to the likelihood of the Donlin Gold mine project itself expanding, the project would become the gateway mine to a major mining district because its development will bring infrastructure to the region and facilitate development of other extractive projects within the mineralized belt and region.[116] The Corps must analyze this new information in a supplemental EIS as well.

IV. ANY SUPPLEMENTAL EIS MUST ADDRESS SERIOUS DEFICIENCIES IN THE EXISTING EIS

In addition to remedying the failure to analyze a realistic tailings spill, a supplemental EIS must address various other deficiencies in the EIS. These include a lack of adequate tribal consultation and failing to disclose and appropriately address the possibility of groundwater contamination from the pit lake.

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[111] NOVAGOLD, Investors: Q&A (2022) (emphasis added).

[112] *See, e.g.*, NovaGold Resources, Earnings Call Transcript: CEO Greg Lang on Q1 2016 Results (Apr. 5, 2016) ("Yes, it's a big deposit but it's still got a lot of room to grow. You know looking at this illustration, we've only extensively explored less than half of the gold bearing system. When the time is right, we'll resume exploration and have the potential to significantly add to our reserves and resources.").

[113] NOVAGOLD, *A Clear Path Forward: 2021 Annual Report* at 21 (2021).

[114] Barrick / NOVAGOLD, *Donlin Gold Reports Excellent Initial 2022 Drill Program Results* at 3 (July 28, 2022).

[115] NOVAGOLD, 2022 Corporate Presentation – May/June at 6-7 (2022).

[116] *See, e.g.*, Shallenberger, K., *In secret recordings, Pebble Mine execs say Donlin mine is too expensive to build*, Alaska Public Media (Sept. 21, 2020); Evolution Capital Advisors, *Nova Minerals LTD*, (June 15, 2020); Kim, G., *Canadian company explores potential gold mine near Donlin*, Alaska Public Media (Oct. 6, 2021).

A. Lack of Meaningful Tribal Consultation

The final EIS, statements of tribal leaders, and interviews with regional residents demonstrate that the Corps did not consult with most tribes in the region and any consultation that did occur was inadequate. The Corps must ensure that a supplement to the EIS includes regular, meaningful, and robust tribal consultation and that traditional knowledge is incorporated consistent with numerous executive orders.[117]

The final EIS chapter on consultation focuses primarily on the public process around scoping and the draft EIS rather than on government-to-government consultation with federally recognized tribes.[118] Even then, the final EIS recounts that public meetings were conducted in selected communities throughout the region, but not in each village.[119] The final EIS acknowledges that Donlin supported travel to public meetings, e.g., by chartering planes or providing gas money for snowmobiles, and that not everyone may have been able to attend or even participate by phone, especially in the scoping meetings.[120] In terms of consultation, among other things, the final EIS recounts that the Corps sent a letter in 2012 to 66 potentially affected tribal governments inviting them to consult, participate as a cooperating agency, or get updates.[121] It then recounts that representatives of just eight tribes attended the subsequent teleconference.[122] The final EIS notes that the Corps made a presentation to tribal leaders at a Bureau of Indian Affairs Providers Conference in 2012 and lists meetings around 2015 with six tribes on the middle Kuskokwim, which the Corps deemed "tribal coordination" meetings with tribal staff.[123] Further the final EIS documents that consultations with tribes under the National Historic Preservation Act were only held in Anchorage and Bethel and appear to have included Alaska Native Claims Settlement Act (ANCSA) corporations who were project proponents.[124] Additionally, the final EIS recounts that a total of seven newsletters were sent out from 2012 to 2018, when the final EIS was published.[125]

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[117] Exec. Order No. 13175, 65 Fed. Reg. 67,249 (Nov. 6, 2000); Memorandum on Tribal Consultation and Strengthening Nation-to-Nation Relationships, 86 Fed. Reg. 7491 (Jan. 26, 2021); Exec. Order No. 13985, 86 Fed. Reg. 7009 (Jan. 20, 2021); Exec. Order No. 13990: Protecting Public Health and the Environment and Restoring Science To Tackle the Climate Crisis, 86 Fed. Reg. 7037 (Jan. 20, 2021); Exec. Order No. 14008: Tackling the Climate Crisis at Home and Abroad, 86 Fed. Reg. 7619 (Jan. 27, 2021).

[118] *See generally* FEIS at 6-1 to 6-14.

[119] *Id.* at 6-4 to 6-5.

[120] *Id.*

[121] *Id.* at 6-2.

[122] *Id.*

[123] *Id.* at 6-3.

[124] *Id.*

[125] *Id.* at 6-14.

From the final EIS, statements of tribal leaders, and interviews with stakeholders in the region, it is apparent that the Corps failed to consult with most tribes in the region and any consultation that occurred was inadequate. This directly contravenes Executive Order 13175 and related presidential directives and disrespects tribal governments; it does not benefit decisionmakers or the public.[126]

At best, the Corps appears to confuse public comment periods with its responsibility to conduct regular, meaningful, and robust government-to-government consultation with tribes. The Corps' efforts to involve the public and tribes in the *public* notice and comment process is a commendable start to enabling baseline public participation. But it is no substitute for the government-to-government consultation required by numerous executive orders and the Corps' own policies.[127] Executive Order 13175 requires federal agencies to consult with tribes before implementing actions that could affect tribes.[128] The Corps does not appear to have consulted on a government-to-government basis with all the tribes in the Yukon-Kuskokwim Delta, especially tribes located on the Lower Kuskokwim.[129] Further, even where tribes attempted to participate or participated in the public process—including by traveling on snowmobile through blizzard conditions—or as cooperating agencies, their concerns were disregarded.[130] The Corps approved perpetual water treatment and wet tailings despite the danger of wet tailings and the availability of dry stack options, and despite deep concerns from tribal leaders about the danger that both pose to the lands and waters in the Yukom-Kuskokwim Delta and to future generations.[131] And even after tribal cooperating agencies raised concerns about rainbow smelt, the Corps recognized the issue but incorporated no mitigation.[132]

Critically, the Corps failed to recognize the realities of tribes in the region, underscoring the need to have regular, ongoing, and meaningful tribal consultation and actually visit each individual tribe. For example, the Corps did not account for the fact that revolving and

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[126] *See, e.g.*, Exec. Order No. 13175, 65 Fed. Reg. 67,249 (Nov. 6, 2000) (recognizing the right of Tribes to self-government and supporting tribal sovereignty and self-determination); Memorandum on Tribal Consultation and Strengthening Nation-to-Nation Relationships, 86 Fed. Reg. 7491 (Jan. 26, 2021).

[127] *Supra* note 126; *see also* U.S. Department of Defense, *Alaska Implementation Guidance for DoD Alaska Native Related Policies and Instructions* (Apr. 13, 2020) (2020 DoD Guidance).

[128] Exec. Order No. 13175, 65 Fed. Reg. at 67,250 (Nov. 6, 2000).

[129] *See* FEIS at 6-3 to 6-4 (listing limited meetings and teleconferences with tribes); Written Statement of RB Slats, Secretary, Chevak Native Village (Aug. 19, 2022) ("Tribal consultation on these big projects needs to be all inclusive to every village.").

[130] *E.g.*, Written Statement of RB Slats, Secretary, Chevak Native Village (Aug. 19, 2022).

[131] *Id.*; Written Statement of Gavin Phillip, President, Native Village of Kwigillingok (Aug. 19, 2022).

[132] *See* Teschner, B. & E. Holley, *Participation or frustration? Local stakeholders and the National Environmental Policy Act (NEPA): Donlin gold project, Western Alaska* 7, 9, The Extractive Industries and Society 100962 (2021).

overwhelmed staff—an issue facing nearly all tribal governments in the region—left no good avenue for tribes to get solid information on the process.[133] That is, a single letter inviting tribes to participate in consultation, followed by a few sporadic, informal communications, is insufficient. Nor did the Corps appear to consider that tribal governments typically meet once a month and that a few weeks or a month to provide comments on a document the size of a box of pilot bread—a staple soul food for many rural Alaskans[134]—is far too short.[135] The Corps also appears to have disregarded the fact that holding a meeting in one village could inhibit other village representatives from speaking, as would having Calista, the for-profit ANCSA regional corporation that is a project proponent, or Donlin representatives at the meetings or on a Donlin-chartered plane.[136]

For any supplement to the EIS, the Corps must provide all affected tribal governments the opportunity to engage in ongoing, robust consultation.[137] This would be consistent with numerous presidential directives and Biden administration priorities supporting tribal

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[133] *See id.* at 6-7; Written Statement of Gavin Phillip, President, Native Village of Kwigillingok (Aug. 19, 2022).

[134] Barber, V., *For rural Alaskans, Pilot Bread is soul food,* Anchorage Daily News (May 28, 2011, updated Dec. 2, 2017).

[135] Written Statement of Noah Wise, President & Mayor, Native Village of Napakiak (Aug. 18, 2022); Written Statement of Gavin Phillip, President, Native Village of Kwigillingok (Aug. 19, 2022); Written Statement of RB Slats, Secretary, Chevak Native Village (Aug. 19, 2022); Written Statement of Fred Phillip, Elder and Tribal Member, Native Village of Kwigillingok (Aug. 19, 2022).

[136] *See* Written Statement of RB Slats, Secretary, Chevak Native Village (Aug. 19, 2022) (describing experience of being flown to the neighboring village of Hooper Bay in a plane chartered by a project proponent, traveling there again on a snowmobile in a blizzard, and discussions focused primarily on the promise of jobs rather than any environmental analysis or risks to subsistence).

[137] *See id.*

sovereignty and environmental justice.[138] Further, a supplemental EIS must incorporate traditional knowledge, consistent with the Biden administration's memorandum on elevating Indigenous Traditional Ecological Knowledge.[139] Before permitting a project as risky as the proposed Donlin Gold mine, consistent with the United Nations' Declaration on the Rights of Indigenous People, the Corps should obtain Tribes' free, prior, and informed consent.[140] This is particularly important here as Calista has never held a shareholder vote on the project.[141] Additionally, the Corps should provide adequate time and additional technical support to tribes when soliciting comments on documents like an environmental impact statement along with translations into Yup'ik of summaries of all documents provided and a Yup'ik translator for all meetings with tribes. Finally, it should consider providing support—financial or otherwise—for an impartial observer or consultant to inform tribes and facilitate tribal participation in the EIS process. Undersigned Tribes welcome the opportunity to engage with the Corps on ways to structure government-to-government consultation on a supplement to the EIS.

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[138] Exec. Order No. 13175, 65 Fed. Reg. 67,249 (Nov. 6, 2000) (recognizing the right of Tribes to self-government and supporting tribal sovereignty and self-determination); Memorandum on Tribal Consultation and Strengthening Nation-to-Nation Relationships, 86 Fed. Reg. 7491 (Jan. 26, 2021); Exec. Order No. 13985, 86 Fed. Reg. 7009 (Jan. 20, 2021) (calling for collaboration across agencies to ensure correction of historical inequities affecting people of color, marginalized communities, and those affected by poverty); *see also* Exec. Order No. 13990, 86 Fed. Reg. at 7037 (Jan. 20, 2021) (stating Biden Administration priorities as including "to listen to the science; to improve public health and protect our environment; to ensure access to clean air and water; to limit exposure to dangerous chemicals and pesticides; . . . bolster resilience to the impacts of climate change; . . . and to prioritize both environmental justice and the creation of the well-paying union jobs necessary to deliver on these goals"); Exec. Order No. 14008, 86 Fed. Reg. 7619 (Jan. 27, 2021) (committing to combat climate change at home and abroad and directing that agencies' approach to climate change shall protect public health, conserve land, waters, and biodiversity, and deliver environmental justice).

[139] Memorandum from White House Office of Science and Technology Policy & Council on Environmental Quality, *Indigenous Traditional Ecological Knowledge and Federal Decision Making* (Nov. 15, 2021).

[140] United Nations, United Nations Declaration on the Rights of Indigenous Peoples, art. 32, § 2 (2007) (UNDRIP) (mandating that nation states consult with Tribal Nations "in order to obtain their free and informed consent prior to the approval of any project affecting their lands or territories and other resources, particularly in connection with the development, utilization or exploitation of mineral, water or other resources"). The United State endorsed UNDRIP on December 16, 2010, and in 2013, the Advisory Council on Historic Preservation (ACHP) developed a plan to support UNDRIP. ACHP, *Section 106 and the U.N. Declaration on the Rights of Indigenous Peoples: General Information and Guidance.*

[141] KYUK, *Calista Shareholders Voice Dissent Over Donlin Mine In Letter To Board*, KYUK (Feb. 14, 2019); KYUK, *Mountain Village Corporation Wants Vote On Donlin Mine,* KYUK (Oct. 16, 2019).

B. Contamination from Pit Lake

The final EIS provides that the pit—and the eventual and perpetual pit lake—for the Donlin Gold mine project will be located a quarter of a mile from Crooked Creek.[142] It estimates that the pit lake will take 52 years to fill and explains the most contaminated water—e.g., acid rock drainage from the waste rock facility and tailings porewater—will be fed into the lake first.[143] For that period of 52 years, groundwater will flow *out* of the pit lake, with the highest flow being for eight years after the start of filling.[144] The final EIS states that the pit lake would be maintained as a hydraulic sink that would, in theory, capture all the contaminants from the mine site.[145] In the final EIS, the Corps defended the validity of its groundwater models and relied on the idea that the pit lake contaminants would be 100 percent contained.[146] While acknowledging the uncertainty in its models, the Corps represented that "no pathways" existed for contamination from the pit lake to escape through groundwater.[147] And it stated that regional flow through the pit lake, which could transport contaminants widely, "would not occur."[148] The Corps declined to gather additional data, e.g., for deep regional groundwater flow or for flow through fractures.[149] And instead, it stated that the additional uncertainty was another justification for adaptive management.[150]

NEPA, however, requires that the Corps examine the reasonably foreseeable significant adverse effects of a project.[151] If information about those effects are "incomplete" or "unavailable," the Corps must disclose that fact.[152] If the missing information is relevant and the costs are not exorbitant, the Corps must obtain the information.[153] If the missing information is relevant but cannot be obtained, the Corps must explain the relevance of the missing information.[154] Further, it must summarize existing credible scientific evidence and evaluate and disclose the impacts based on accepted scientific approaches.[155] Notably, "reasonably foreseeable" includes "impacts which have catastrophic consequences, even if their probability of occurrence is low."[156]

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[142] FEIS at 3.6-14.
[143] FEIS at 3.6-2, 3.6-43, 3.6-47; *id.* at 3.5-98.
[144] *Id.* App. X at 238; *id.* at 3.6-2.
[145] *Id.* at 3.6-43.
[146] *Id.* at 3.6-43; *id.* App. X at 170 to 172, 180.
[147] *Id.* App. X at 171 to 172.
[148] *Id.* App. X at 180.
[149] *E.g.*, *id.* App. X at 149 to 151.
[150] *Id.* App. X at 165 to 166.
[151] *E.g.*, 40 C.F.R. § 1502.22.
[152] *Id.*
[153] *Id.* § 1502.22(a).
[154] *Id.* § 1502.22(b).
[155] *Id.*
[156] *Id.*

In the final EIS, the Corps failed to examine the reasonably foreseeable impact of the pit lake contaminating groundwater. And by only acknowledging the uncertainty of existing models, the Corps failed to acknowledge the fact that critical information about the validity of the models—and the potential impacts of contamination from the pit lake—was incomplete or unavailable. This information includes data on deep groundwater flow, the flow of groundwater through fractures, and the possibility of a shallow aquifer completely bypassing the pit lake. For example, the U.S. Environmental Protection Agency (EPA), a cooperating agency on the EIS, pointed out that by not treating water during the pit lake's filling, the Corps and Donlin "assure" that contamination from the pit lake will reach groundwater.[157] The EPA also noted that over the 52-year pit-filling period, contaminants could flow from the pit lake more than 50 miles and that even in lower aquifer depths they could travel more than 0.7 miles—more than the 0.25 mile distance between the pit rim and Crooked Creek.[158] Further, because the time period for the pit lake is forever, low probability releases of contaminants from the pit lake could "plausibly occur."[159] Additionally, the EPA noted that contamination could seep out through fractures in the rock.[160] The U.S. Fish and Wildlife Service (USFWS), another cooperating agency, raised concerns that contaminants could escape from the pit lake through

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[157] EPA, Region 10, Comments on Preliminary Final Environmental Impact Statement at 3 (Sept. 11, 2017) (EPA Comments on PFEIS).

[158] Corps, EPA Comments-Responses Matrix for Draft EIS at 8 (May 2016) ("The range of hydraulic conductivities (Table 3.6-2) are fairly wide, and indicate that contamination could migrate up to 14-feet per day during the 52-year filling period of the pit lake. Even in the lower aquifer depths, the contaminants could migrate up to 0.2-feet per day").

[159] EPA Comments on PFEIS at 83 ("Given that contaminants associated with the mine pit, tailings, and waste rock overburden will exist in perpetuity, even very low probability releases could plausibly occur."); *see also* EPA, Region 10, Comments, Preliminary Draft Environmental Impact Statement at 28 (June 8, 2015) ("it is not unreasonable to include pit lake water level management failure here as a low probability but high magnitude event"); U.S. Bureau of Land Management, Comments, Preliminary Draft Environmental Impact Statement at 2 (June 9, 2015) ("The pit lake and dam, and the waste water generated by the mine will have to be monitored and treated into perpetuity with a probability that runoff from the pit lake and mine will flow into the Kuskokwim river, affecting all life downstream. This will not be covered by a trust fund, and will cost the State of Alaska and federal agencies. The long term financial responsibility of waste water after the closure of the mine is not adequate, and how much it will cost and who will pay is not clear").

[160] *E.g.*, EPA Comments on PFEIS at 15; *see also* Myers, T., PhD, Technical Memorandum – Review of the Draft Supplement Environmental Impact Statement for the Donlin Gold Project at 4, 25 (May 11, 2016) (Myers 2016).

deep regional groundwater flow.[161] Other commenters, including a hydrologist, noted that contaminated water from the mine site could short-circuit the pit lake altogether via a shallow aquifer and flow directly into Crooked Creek.[162] Both cooperating agencies and the public called for more testing, such as for deep groundwater flow and the role of fractures in groundwater and contaminant flow.[163]

The Corps rejected these requests, however, and never examined or disclosed the reasonably foreseeable possibility that contaminants could get out from the pit lake. It stated instead that the error rate for its models was acceptable.[164] The Corps stated that it didn't need to look at deep regional flow because its application of existing topographic, hydrologic, and other data show that deep flow would not occur.[165] It also notes that boreholes would be dug in the course of mine development and defers any adjustment to the models to adaptive management to be incorporated in the state permitting process, though it does not require this.[166]

In a supplement to the EIS, the Corps must examine and disclose to the public the possibility of groundwater contamination from the pit lake and must explain why critical data relevant to the models on which it relies to predict impacts are incomplete or unavailable. If unavailability is due to cost, the Corps must explain why it cannot obtain such critical measurements, such as by requiring deep groundwater wells to look at regional flow, when Donlin has just put up $60 million to fund its most recent feasibility study this summer 2022.[167] Further, the Corps must summarize existing relevant scientific evidence and provide an assessment of impacts to the public and Tribes.[168]

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[161] USFWS, Comment/Response Matrix for Draft EIS at 150-154 (2016) (2016 USFWS Comment/Response Matrix) ("at depths that exceed the finite vertical extent of capture, any contaminated water in the pit lake will be free to flow out of the (former) pit into the surrounding groundwater flow system(s)."); USFWS, Comment/Response Matrix for Preliminary Final EIS at 1 (2017) ("The plume of contaminated water into the surrounding bedrock and presence of 'regional' groundwater flow at relevant depths have not been sufficiently addressed to determine potential for groundwater (and surface water) contamination depending on connectivity.").

[162] Myers 2016 at 4, 25.

[163] *E.g.*, EPA Comments on PFEIS at 33; 2016 USFWS Comment/Response Matrix at 21-36; Chuathbaluk Traditional Council, Letter to Richard Darden, Attachment at 9-10 (Jan. 25, 2017); Myers 2016 at 12.

[164] FEIS at 3.6-19.

[165] *Id.* at 3.6-43, 48; *id.*, App. X at 187 to 188.

[166] *Id.*, App. X at 150 to 151; *id.* at 5-45; JROD at B2-17.

[167] Brehmer, E., *Donlin Gold starts its biggest drilling program in a decade,* Anchorage Daily News (Feb. 2, 2022).

[168] 40 C.F.R. § 1502.22(b).

V. FAILURES TO COMPLY WITH THE CLEAN WATER ACT GUIDELINES REQUIRE REVERSING THE CORPS' PRIOR DECISION

Even without accounting for the new information detailed above, the Corps' decision to permit the Donlin Gold mine project is unlawful and should be revoked. The undersigned Tribes respectfully request that the Corps reverse its finding of compliance with the Clean Water Act and revoke its 404 permit consistent with the Clean Water Act section 404(b)(1) Guidelines. Under this option, the Corps need not look at new information or issue a new EIS; the Corps can simply correct its prior decision and comply with the law.

Under the Clean Water Act, the Corps cannot issue a permit authorizing placement of fill material if it "will cause or contribute to significant degradation" of waters of the United States.[169] Further, the Guidelines require that compensatory mitigation "be commensurate with the amount and type of impact that is associated with a particular DA permit."[170] As significant degradation to aquatic resources is predicted and not mitigated, and the compensatory mitigation fails to meet the requirements of the Clean Water Act, the Corps must correct its prior compliance finding and revoke the 404 permit.

A. Failure to Mitigate Predicted Significant Degradation to Rainbow Smelt

The final EIS predicts significant degradation to rainbow smelt eggs and larvae, and the Corps relies on monitoring and other measures to make the finding of no significant degradation needed to support its 404 permit.[171] Because this finding lacks support in the record and reason—monitoring and communicating with communities would not decrease degradation to rainbow smelt—the Corps should reverse its finding and revoke the 404 permit.

Specifically, the final EIS and the JROD acknowledge that propeller wash from Donlin barges could damage or destroy the eggs and larvae of rainbow smelt, which spawn in certain sections of the Kuskokwim River.[172] Rainbow smelt are an important anadromous fish that return to the Kuskokwim River each spring after breakup to spawn. Smelt travel as a single body up the Kuskokwim River in a short one-to-two-day period and provide the first source of fresh fish to the region in the spring. After spawning, rainbow smelt eggs incubate for approximately 21 days before larvae float out to the ocean.[173] The final EIS notes that in 2015, there would have been no way for Donlin barges—triple the current number and up to four times as large—to avoid the shallow and narrow sections in which rainbow smelt spawned that year.[174] The EPA

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[169] *Id.* § 230.10(c).

[170] *Id.* § 230.93(a)(1).

[171] *E.g.*, FEIS at 3.13-125; JROD at B2-13; *see* 45 Fed. Reg. 85,343 (Dec. 24, 1980) ("In this context, 'significant' and 'significantly' mean more than 'trivial', that is, significant in a conceptual rather than a statistical sense.").

[172] *E.g.*, FEIS at 3.13-125; JROD at B2-13.

[173] FEIS at 3.13-43.

[174] *Id.* at 3.13-113 to 3.13-114, *id.* at 3.13-124.

noted that "impacts to smelt spawning locations would have population-level implications that would be felt at least regionally."[175]

The Corps then concludes that there would be no significant degradation, but it does so by relying on measures that would have no effect on rainbow smelt. The Corps reasoned "with implementation of the rainbow smelt monitoring program, the communication program, and the subcommittees under [the Donlin Advisory and Technical Review Oversight Committee (DATROC)], there would be no significant degradation of Kuskokwim River [waters of the United States]."[176] The Corps also notes that Donlin would implement barging guidelines for operating at "certain river flow rates" and conduct surveys to identify locations to avoid in order to minimize barge scour.[177] None of these measures would actually prevent harm to incubating smelt eggs or drifting larvae. Collecting baseline data on rainbow smelt does nothing to prevent barges from running through rainbow smelt spawning grounds. Warning a community of an incoming barge does nothing for rainbow smelt eggs or larvae that might be in the barge's path. Neither do barge speed guidelines fix the issue that larger and more frequent barges may pass over rainbow smelt spawning areas. Similarly, barge flow guidelines would likely not prevent interference with the rainbow smelt incubation period from mid-to-late May to mid-to-late June when Kuskokwim River flows are highest, as barges are unlikely to stop.[178] Further the subsistence subcommittee, which is voluntary and has no actual decision-making power, would not remedy the predicted harm to rainbow smelt.[179] Indeed, the Corps acknowledged that in 2015, there would have been no way for a barge to avoid the narrow and shallow section where smelt had spawned.[180]

Because the measures on which the Corps relies do not actually counter the predicted significant degradation to rainbow smelt, the Corps should reverse its finding of no significant degradation. No permit should issue until measures are established that would in fact prevent significant degradation to rainbow smelt.

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[175] McLerran, D. J., Regional Administrator, EPA Region 10, Letter to Col. M. Brooks, Alaska District Engineer, Corps, Enclosure (June 27, 2016).
[176] JROD at B2-17; *see also id.* at B2-20 (listing avoidance and minimization measures related to the aquatic ecosystem and organisms).
[177] FEIS, App. X at 70 to 71.
[178] *See* Morris, W., Senior Aquatic Scientist, Owl Ridge Natural Resource Consultants, Inc., Memorandum to Enric Fernandez, Senior Environmental Coordinator, Donlin Gold at 2 (July 27, 2016) (referencing "rising flows in June"); AMEC Americas Limited, Donlin Gold Project River Barge Fleet Design and Operation at 2-5 (July 2, 2013) (graphically displaying daily flow of Kuskokwim River during shipping season and showing highest flows in June).
[179] *See* FEIS at 5-9, Design Feature A31.
[180] *Id.* at 3.13-125.

B. Failure to Require Adequate Compensatory Mitigation

Similarly, in violation of the Clean Water Act section 404(b)(1) Guidelines, the Corps failed to require compensatory mitigation "commensurate" with the impacts of the proposed mine. Instead, it approved a compensatory mitigation plan that relies primarily on permittee-responsible mitigation in a watershed more than 200 miles away from the site of the mine's main impacts. Accordingly, Corps should reverse its finding that the Project's potential impacts are adequately compensated and revoke the 404 permit.

The final EIS explains that the main long-term and permanent impacts of the proposed project will occur at the mine site in the Crooked Creek and Kuskokwim River watersheds.[181] The proposed Donlin Gold mine project will permanently destroy almost 3,000 acres of wetlands and over 30 miles of streams.[182] These include but are not limited to the destruction of most of American Creek by the proposed mine pit, the fill of 70 percent of the Anaconda Creek watershed by the tailings pond and dam, and dewatering an 11-mile section of Crooked Creek, destroying a majority of salmon redds and raising the temperature of the stream.[183]

Under the Clean Water Act, the Corps must require compensatory mitigation for unavoidable impacts.[184] The section 404(b)(1) Guidelines specifically require compensatory mitigation "commensurate" with the impacts.[185] They further require the use of a "watershed approach" and specify that preservation and permittee-responsible mitigation are two of the least-favored forms of compensatory mitigation.[186] The Guidelines further provide that permittee-responsible mitigation should be in the same watershed as the impact and that the Corps should use functional assessment tools to ensure the adequacy of compensatory mitigation.[187]

The Corps' approval of Donlin's compensatory mitigation plan violates the letter and spirit of the Clean Water Act section 404(b)(1) Guidelines. Donlin's proposal, which the Corps approved, relied almost exclusively on out-of-watershed compensation in the Chuitna

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[181] *E.g.*, *id.* at 1-1 to 1-3, 2-6 to 2-61, 3.0-1 to 3.27-3; *accord* JROD at 3-1; *see also* EPA, SPN-1995-120 Enclosure to 404 comments at 7 (June 25, 2018) ("the majority of aquatic resource impacts from the Donlin Gold mine would occur on the other side of the Alaska Range within the Kuskokwim Mountains ecoregion").

[182] Block 23, Compensatory Mitigation Plan at 15-16, Tbls. 2 & 3 (July 2018) (Compensatory Mitigation Plan).

[183] *See* FEIS at 3.13-89 (describing flow reductions in stream segment CR-R4, among others); *id.* at Fig. 3.13-1 (length of CR-R4 approximately 4 miles as the crow flies); *id.* at 3.13-13 (documenting that CR-R4 has the highest sinuosity of any segment on Crooked Creek). Four miles in a straight line thus means 10.8 stream miles (4 x 2.7 = 10.8).

[184] 40 C.F.R. § 230.93(a)(1).

[185] *Id.*

[186] *Id.* § 230.93(a)(2), (b) & (c); *see also id.* § 230.93(e) (in-kind mitigation preferred).

[187] *Id.* § 230.93(a)(3), (b)(1), (3)(b)(5)-(b)(6) & (f)(1).

watershed.[188] Of the 3,000 acres of wetlands and more than 30 miles of streams destroyed, Donlin would only provide in-watershed mitigation for 200 acres of wetlands and 1.7 miles of stream. The remainder would occur in the Chuitna watershed—roughly the equivalent, in terms of straight-line distance, of requiring mitigation in New York City for a project taking place in Washington, D.C.[189] Further, the plan does not account for the "functional" losses and gains of the project and proposed mitigation, which is not necessarily the same as a direct acreage or linear-feet comparison.[190] Rather, the Corps rejected two proposed functional assessments submitted by Donlin and then allowed Donlin to use what it computes as an across-the-board 2:1 compensatory mitigation ratio for preservation, regardless of the amount of temporal loss.[191] And the Corps failed to explain how it applied a watershed approach to select a watershed more than 200 miles away as the locus for compensatory mitigation, rather than particular projects in the Kuskokwim River watershed.[192] Notably, even the asserted "preservation" provided in the Chuitna watershed would last just 99 years, in contrast to the *permanent* and devastating effects the mine would have on the Kuskokwim River watershed.

Relatedly, the Corps should reevaluate the choice to rely almost exclusively on out-of-watershed mitigation despite the Guidelines' preference for same watershed mitigation.[193] Donlin's compensatory mitigation plan purportedly uses the "watershed approach," the goal of which is to maintain and improve the quality and quantity of aquatic resources within watersheds through the strategic selection of compensatory mitigation sites.[194] The watershed approach requires specific considerations for selecting the watershed scale.[195] Yet, there is no indication in the final EIS of how Donlin or the Corps arrived at a seemingly statewide watershed scale, nor is there adequate explanation of why Donlin needed to select a mitigation project in the Chuitna watershed, which is hundreds of miles away from the Kuskokwim watershed, let alone the Crooked Creek watershed.[196]

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[188] Compensatory Mitigation Plan at 41-47.

[189] *Id.*; *id.* at 71, Tbls. 24 & 25. Additionally, the mitigation authorized would be taking place on the other side of a significant mountain range—the Alaska Range—that includes the tallest mountain in North America. *Id.* at 15-16, Tbls. 2 & 3.

[190] *See* EPA, SPN-1995-120 Enclosure to 404 comments at 8-9.

[191] Compensatory Mitigation Plan at 18 n. 2, 66, 70; *see id.* at 19 (describing Donlin's attempt to "achieve the minimum 1:1 ratio under the Rule"); Cooper, D. M., Acting Field Supervisor, USFWS, Letter to Mr. Jamie Hyslop, Regulatory Division, Alaska District, Corps at 2-3 (Mar. 30, 2018).

[192] *See generally* Compensatory Mitigation Plan; Kayser-Forster, J., A preliminary review of Donlin Gold LCC's Final Compensatory Mitigation Plan at 5-7 (2018) (Kayser-Forster 2018) (detailing the failure to explain the watershed approach and other failings of the plan).

[193] 33 C.F.R. § 332.3(b)(1).

[194] *Id.* § 332.3(c).

[195] *Id.* § 332.3(c)(4).

[196] Kayser-Forster 2018 at 5-7 (detailing the failure to explain the watershed approach and other failings of the plan).

As the compensatory mitigation plan proposed by Donlin and approved by the Corps does not purport to satisfy the Clean Water Act section 404(b)(1) Guidelines requiring "commensurate" compensation for the project's impacts, the Corps should reverse its compensatory mitigation decision. No 404 permit should issue until the Corps requires compensatory mitigation that would, consistent with the Guidelines, compensate for the Donlin Gold mine project's impacts, particularly with respect to the areas that actually would be affected and the tribes and community members who would experience the greatest negative impacts.

VI. TRUST RELATIONSHIP; TRIBES' GOVERNMENT-TO-GOVERNMENT RELATIONSHIP WITH THE UNITED STATES

The undersigned federally recognized Tribes respectfully remind the Corps of its trust responsibility and its unique government-to-government relationship with Tribes.

The undersigned Tribes are all federally recognized tribes possessing inherent sovereignty.[197] Like all federally recognized tribes, this status has never been diminished, including by the passage of ANCSA.[198] Tribes have a broad responsibility and regularly provide for the health, safety, and welfare of their people.[199] Additionally, Tribes have a unique government-to-

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[197] *E.g.*, Pub. L. No. 103–454, 108 Stat. 4791 (1994) (finding that "ancillary to that authority, the United States has a trust responsibility to recognized Indian tribes, maintains a government-to-government relationship with those tribes, and recognizes the sovereignty of those tribes"); 87 Fed. Reg. at 4636-4641.

[198] Alaska Native Claims Settlement Act, Pub. L. No. 92-203, 85 Stat. 688 (1971) (containing no language limiting sovereignty of Alaska tribes); *see also* Case, D. S. & D. A. Voluck, *Alaska Natives and American Laws* 390 (3d ed. 2012) (explaining that under basic Indian law principles, courts have held "that ANCSA did not terminate Alaska Native tribes and their inherent power of self-governance" and citing cases); Cohen's Handbook of Federal Indian Law § 4.07[3][d] at 353-54 (2012 ed.), *John v. Baker*, 982 P.2d 738, 770 n. 27 (Alaska 1999) (quoting Senator Ted Stevens, one of ANCSA's architects, as stating "'ANCSA was and is a land settlement. It did not terminate the special relationship between Alaska Natives from the Federal Government or resolve any questions concerning the governmental status, if any, of various Native groups. There's not one reference to sovereignty in ANCSA or in the 1971 Conference report.'"); *accord* Anderson, R. T., *Alaska Native Rights, Statehood, and Unfinished Business*, 43 Tulsa L. Rev. 17, 41 (2007).

[199] *E.g.*, MacArthur, A. R., *4 Yukon-Kuskokwim villages on lockdown in response to COVID-19 cases*, KYUK (Aug. 5, 2020) (describing lockdown in Nunapitchuk, Kasigluk, Napakiak, and Aniak in response to the COVID-19 crisis).

government relationship with the United States, including in consultation.[200] And the United States has a trust relationship with tribes, one it has repeatedly reaffirmed.[201]

The Corps' own guidance on implementing policies relating to American Indians and Alaska Natives confirms the agency's central responsibilities to Alaska tribes. Its 2020 guidance reaffirms the Corps' trust responsibility to Alaska tribes and for identified tribal resources on private lands.[202] It confirms that the Corps has a government-to-government relationship with tribes, including in consultation, and it explains that consultation is a *process*.[203] For that reason, it is even more important that the Corps come to the Yukon-Kuskokwim Delta and consult on a government-to-government basis with affected Tribes.

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[200] Federally Recognized Indian Tribe List Act of 1994, Pub. L. 103–454, 108 Stat. 4791 (November 2, 1994); Indian Entities Recognized by and Eligible To Receive Services From the United States Bureau of Indian Affairs, 87 Fed. Reg. 4636, 4637 (Jan. 28, 2022).

[201] *E.g.*, Federally Recognized Indian Tribe List Act, 108 Stat 4791 (finding "the United States has a trust responsibility to recognized Indian tribes, maintains a government-to-government relationship with those tribes, and recognizes the sovereignty of those tribes"); Memorandum on Tribal Consultation and Strengthening Nation-to-Nation Relationships, 86 Fed. Reg. 7491, 7491 (Jan. 26, 2021) ("It is a priority of my Administration to make respect for Tribal sovereignty and self-governance, commitment to fulfilling Federal trust and treaty responsibilities to Tribal Nations, and regular, meaningful, and robust consultation with Tribal Nations cornerstones of Federal Indian policy."); Cohen's Handbook §5.04[3][a] at 414 n.58 (listing the following additional authorities: President Barack Obama, Memorandum on Tribal Consultation, 74 Fed. Reg. 57881 (2009) ("The United States has a unique legal and political relationship with Indian tribal governments."); *accord* President George W. Bush, Exec. Order No. 13, 336, American Indian and Alaska Native Education, 40 Weekly Comp. Pres. Doc. 713 (Apr. 30, 2004); President William J. Clinton, Remarks to Indian and Alaska Native Tribal Leaders, 1994 Pub. Papers 800 (Apr. 29, 1994) ("It is the entire government, not simply the Department of the Interior, that has a trust responsibility with Tribal governments. And it is time the entire government recognized and honored that responsibility."); President Richard M. Nixon, Special Message to Congress on Indian Affairs, 213 Pub. Papers 564 (July 8, 1970) ("The United States Government acts as a legal trustee for the land and water rights of American Indians. . . . Every trustee has a legal obligation to advance the interests of the beneficiaries of the trust without reservation and with the highest degree of diligence and skill.")); *id.* at § 5.04[3][a] at 414 ("Nearly every piece of modern legislation dealing with Indian tribes contains a statement reaffirming the trust relationship between tribes and the federal government." (citing statutes)).

[202] 2020 DoD Guidance at 2 ("The following are the guiding principles for interacting with Alaska Native tribes: the recognition of tribal sovereignty and cultural traditions, applications of federal trust responsibilities, consultation on a government-to-government basis, and protection of natural and cultural resources of tribal importance.").

[203] *Id.* at 5.

VII. CONCLUSION

Significant new information about fishery collapses in the Kuskokwim Region, extreme precipitation due to climate change, erosion and usteq, water temperature, tailings dam failures, and the scope of the proposed Donlin Gold project have become available since the Corps' publication of the final EIS in April 2018. This information bears directly on the potential impacts of the proposed Donlin Gold mine project and compels the Corps to supplement the final EIS. Any supplement must incorporate meaningful tribal consultation and address numerous existing gaps in the final EIS. Even without examining new information or issuing a supplemental EIS, the Corps' failure to comply with the Clean Water Act in issuing the 404 permit to Donlin requires that the Corps simply reverse that decision and set aside the permit. We respectfully request an in-person meeting with the Corps the week of September 26, 2022 to discuss these matters on a government-to-government basis. Further, we invite the Corps to visit our region and meet with our tribal governments.

Thank you for your consideration of our request.

Quyana,

CHEVAK NATIVE VILLAGE

NATIVE VILLAGE OF KWINHAGAK

NATIVE VILLAGE OF KWIGILLINGOK

NATIVE VILLAGE OF KONGIGANAK

NATIVE VILLAGE OF NIGHTMUTE

TULUKSAK NATIVE COMMUNITY

VILLAGE OF CHEFORNAK

KASIGLUK TRADITIONAL COUNCIL

NATIVE VILLAGE OF EEK

NATIVE VILLAGE OF NAPAKIAK I.R.A.

NATIVE VILLAGE OF TUNUNAK

ORUTSARARMIUT NATIVE COUNCIL

NATIVE VILLAGE OF NUNAPITCHUK

Enclosures

SOURCES IN SUPPORT OF TRIBES' LETTER
RE. INFORMATION SUPPORTING REEVALUATION AND REVOCATION OF 404 PERMIT FOR PROPOSED DONLIN GOLD MINE PROJECT

AECOM, Technical Memorandum to Corps, Re. Evaluation of Proposed Donlin Gold Tailings Storage Facility Dam with Respect to Mount Polley Tailings Dam Breach (June 3, 2015)

AMEC Americas Limited, Donlin Gold Project River Barge Fleet Design and Operation (July 2, 2013)

ANCOLD, *Guidelines on Tailings Dams: Planning, Design, Construction, Operation and Closure* (May 2012)

Advisory Council on Historic Preservation, *Section 106 and the U.N. Declaration on the Rights of Indigenous Peoples: General Information and Guidance*

Aguirre, E. L., *UML-led Team Finds Source of Arctic Mercury* (July 2017)

Alatna Village Council v. Heinlin, Decl. of T. P. Beaudreau, Case No. 3:20-cv-00253-SLG (D. Alaska, Feb. 22, 2022)

Alatna Village Council v. Heinlin, Defs.' Mot. for Voluntary Remand, Case No. 3:20-cv-00253-SLG (D. Alaska, Feb. 22, 2022)

Alaska Department of Fish & Game, *Kuskokwim River Salmon Fishery Announcement #14: 2021 Preliminary Kuskokwim Area Season Summary* (Nov. 4, 2021)

American Association for the Advancement of Science, *Community Spotlight: Homer and Napakiak* (Sept. 2019)

Arctic Monitoring and Assessment Program (AMAP), AMAP Assessment 2021: Mercury in the Arctic (2021) (excerpts)

Azam, S. & Q. Li, *Tailings Dam Failures: A Review of the Last One Hundred Years*, Geotechnical News (Dec. 2010)

BGC Engineering Inc., Analysis of Crooked Creek Stream Temperature – Draft (Sept. 28, 2021)

Barber, V., *For rural Alaskans, Pilot Bread is soul food,* Anchorage Daily News (May 28, 2011, updated Dec. 2, 2017)

Barrick & NOVAGOLD, *Donlin Gold Reports Excellent Initial 2022 Drill Program Results* (Jul. 28, 2022)

Bates, R., Division of Water, Letter to T. Waldo, Earthjustice, Re. Donlin Gold Mine Certificate of Reasonable Assurance Remand Decision (3AN-21-06502CI) (May 13, 2022)

Beck, C. A. H. *et al.*, ADAPT Y-K Delta: Climate Adaptation Strategies for the Yukon-Kuskokwim (Y-K) Delta Region (2019)

Brehmer, E., *Donlin Gold starts its biggest drilling program in a decade,* Anchorage Daily News (Feb. 2, 2022)

Brooks, J., *As Kuskokwim Fishing Lawsuit Grows, Lawyers Say Subsistence Could be Affected Across Alaska*, Alaska Beacon (July 13, 2022)

Buzard, R. M. *et al.*, Alaska Department of Natural Resources, Division of Geological & Geophysical Surveys, *Erosion exposure assessment of infrastructure in Alaska coastal communities* (2021)

Canadian Dam Association, *Dam Safety Guidelines 2007* (2013 edition)

Canadian Dam Association, *Technical Bulletin: Application of Dam Safety Guidelines to Mining Dams* (2019 edition)

Center for Science in Public Participation, Comments on Donlin draft EIS (May 24, 2016) (excerpts)

Center for Science in Public Participation, Memorandum (May 5, 2022)

Chuathbaluk Traditional Council, Letter to Richard Darden (Jan. 25, 2017)

Communities of Lower Kalskag, Upper Kalskag, Aniak, Chuathbaluk, Napaimute, Crooked Creek, Georgetown, Red Devil, Sleetmute, and Stony River, *Adapting to Climate Change in the Middle Kuskokwim* (2020)

Cooper, D. M., Acting Field Supervisor, U.S. Fish & Wildlife Service, Letter to Mr. Jamie Hyslop, Regulatory Division, Alaska District, Corps (Mar. 30, 2018)

Dalpatram, A., *Estimation of Tailings Dam Break Discharges, Workshop on Dam Break Analysis* (Aug. 24-26, 2011)

Donlin, Donlin Gold Project: Human Health Risk Assessment – U.S. Environmental Protection Agency's Detailed Comments, Donlin Response (2018)

Douglas, T. & J. Blum, *Mercury Isotopes Reveal Atmospheric Gaseous Mercury Deposition Directly to the Arctic Coastal Snowpack*, 6 Environ. Sci. Technol. Lett. 235–242 (2019)

Douglas, T. A. *et al. Recent degradation of interior Alaska permafrost mapped with ground surveys, geophysics, deep drilling, and repeat airborne lidar*, 15 The Cryosphere 3555-3575 (2021)

Earthworks, Safety First: Guidelines for Responsible Tailings Management (May 2022)

Ebertz, O., *Residents of the Y-K Delta should expect more tundra fires as the climate continues to warm,* KYUK (Aug. 18, 2022)

Environmental Resources Management, *Human Health Risk Assessment for the Donlin Gold Project, Alaska* (June 2017)

Evolution Capital Advisors, *Nova Minerals LTD,* (June 15, 2020)

Franks, D. *et al., Tailings facility disclosures reveal stability risks*, Nature 11:5353 (2021)

Global Tailings Review.org, *Global Industry Standard on Tailings Management* (2020)

Janssen, S. E. *et al., Chemical and Physical Controls on Mercury Source Signatures in Stream Fish from the Northeastern United States*, 53 Env. Sci. Tech. 17 (2019)

Kayser-Forster, J., A preliminary review of Donlin Gold LCC's Final Compensatory Mitigation Plan (2018)

Kim, G., *Canadian company explores potential gold mine near Donlin*, KYUK (Oct. 6, 2021)

Krakow, M., *As climate change reshapes Alaska's landscapes, tundra fires are getting worse,* Anchorage Daily News (June 14, 2022)

KYUK, *Calista Shareholders Voice Dissent Over Donlin Mine In Letter To Board*, KYUK (Feb. 14, 2019)

KYUK, *Mountain Village Corporation Wants Vote On Donlin Mine,* KYUK (Oct. 16, 2019)

Kuskokwim River Inter-Tribal Fish Commission, *Kuskokwim River Salmon Situation Report* (Sept. 2021)

MacArthur, A., *4 Yukon-Kuskokwim villages on lockdown in response to COVID-19 cases*, KYUK (Aug. 5, 2020)

MacArthur, A. R., *For the First Time Ever, State to Close Kuskokwim and Most Tributaries to Coho Fishing,* KYUK (Aug. 16, 2022)

McLerran, D. J., Regional Administrator, EPA, Letter to Col. M. Brooks, Alaska District Engineer, Corps, Enclosure to 3(b) Letter on Public Notice POA-1995-120 (June 27, 2016)

Mimbs Noyce, C., *Why Alaska's Fire Season was so Unusual*, The Atlantic (Aug. 24, 2022)

Mining Association of Canada, *A Guide to the Management of Tailings Facilities Version 3.2*, (Mar. 2021).

Morris, W., Senior Aquatic Scientist, Owl Ridge Natural Resource Consultants, Inc., Memorandum to Enric Fernandez, Senior Environmental Coordinator, Donlin Gold (July 27, 2016)

Murkowski, L., Press Release: *Delegation Announces Disaster Declarations for Alaska Fisheries* (Jan. 21, 2022)

Myers, T., PhD, Technical Memorandum – Review of the Draft Supplement Environmental Impact Statement for the Donlin Gold Project (May 11, 2016)

NOAA National Centers for Environmental Information, State Climate Summaries 2022: Alaska (2022)

NOVAGOLD, 2022 Corporate Presentation – May/June (2022)

NOVAGOLD, *A Clear Path Forward: 2021 Annual Report* (2021)

NOVAGOLD, Investors: Q&A (2022)

NovaGold Resources, Earnings Call Transcript: CEO Greg Lang on Q1 2016 Results (Apr. 5, 2016)

Obrist, D. *et al.*, *Tundra uptake of atmospheric elemental mercury drives Arctic mercury pollution*, 547 Nature 201–204 (2017)

Olson, C. *et al.*, *Mercury in Active-Layer Tundra Soils of Alaska: Concentrations, Pools, Origins, and Spatial Distribution*, 32 Global Biogeochemical Cycles 1058–1073 (2018)

Orutsararmiut Native Council, Letter to Alaska Department of Environmental Conservation, Re. Donlin Gold Mine Certificate of Reasonable Assurance (Mar. 29, 2022)

Orutsararmiut Native Council v. Alaska Dep't of Env't Conservation, Mot. for Interlocutory Remand, Case No. 3AN-21-06502 CI (Nov. 19, 2021)

Orutsararmiut Native Council v. Alaska Dep't of Env't Conservation, Order Granting Interlocutory Remand, Case No. 3AN-21-06502 CI (Dec. 29, 2021)

Ramboll US Consulting, Inc., Draft Report: Donlin Gold Mine Supplemental Mercury Modeling and Mass Balance Analysis (Oct. 22, 2021)

SRK Consulting Inc., Fort Knox TSF & WSR Dam Failure Analysis (Mar. 2010)

SRK Consulting (Canada) Inc., Tailings Storage Facility and Snow Gulch Reservoir – Early Stage FMEA Workshop (Mar. 2015)

SNAP Community Climate Charts, Crooked Creek (Qipcarpak), Alaska, University of Alaska Fairbanks, Scenarios Network for Alaska, Community Climate Charts, https://snap.uaf.edu/tools/community-charts (last accessed Aug. 26, 2022)

Schreiber, M., *Climate change is driving a sharp increase in Arctic mercury levels, a new report says*, ArcticToday (Sept. 7, 2022)

Secretariat, Minamata Convention, *Technical guidelines on the environmentally sound management of wastes consisting of, containing or contaminated with mercury or mercury compounds, Note* (Aug. 20, 2021)

Sergeant, C. J. *et al.*, *Risks of mining to salmonid-bearing watersheds*, 8 Science Advances 26 (Jul. 1, 2022)

Shallenberger, K., *In secret recordings, Pebble Mine execs say Donlin mine is too expensive to build*, Alaska Public Media (Sept. 21, 2020)

Siddon, E. (ed.), NOAA Fisheries, *Ecosystem Status Report 2021: Eastern Bering Sea* (Dec. 2021)

Skeena Wild Conservation Trust, *Protecting Communities and Watersheds: Risks of Tailings Dam Failures in the Face of Climate Change* (Jul. 2022)

Small, A. *et al.*, *Advancing the State of Practice for Tailings Dam Breach Assessment Using Empirical Correlations*, CDA 2017 Annual Conference, Kelowna, BC, Canada (Oct. 16-18, 2017)

Teschner, B. & E. Holley, *Participation or frustration? Local stakeholders and the National Environmental Policy Act (NEPA): Donlin gold project, Western Alaska*, The Extractive Industries and Society 100962 (2021)